SEVENTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL

FOR THE YEAR 1884.

INCLUDING THE ANNUAL REPORT ON VACCINATION IN BENGAL
FOR THE YEAR 1884-85.

BY

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Sanitary Commissioner for Bengal.

Calcutta:

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1885.

VITAL STATISTICS OF THE DISTRICTS IN BENGAL

FOR THE YEAR 1882.

ANNUAL FORM No. I.—BIRTHS *registered in the Municipalities and Towns in the Districts of the Bengal Province during the year* 1882.

1	2	3	4	5			6			7	8	9
Districts.	Number.	Municipalities and Towns.	Population according to Census of 1881.	Number of Births registered.			Ratio of Births per 1,000 of Population.			Number of males born to every 100 females born.	Excess of births over deaths per 1,000 of population.	Excess of deaths over births per 1,000 of population.
				Male.	Female.	Total.	Male.	Female.	Total.			
Burdwan	1	Burdwan	34,080	478	462	940	14·02	13·55	27·58	103	...	21·77
Bankura	2	Bankura	18,747	304	286	590	16·21	15·25	31·47	106	......	5·76
	3	Bishenpore	21,283	235	212	447	11·04	9·96	21·00	110	...	28·10
Midnapur	4	Midnapur	33,560	202	203	405	6·01	6·04	12·06	99	......	14·66
Hughli	5	Hughli and Chinsurah	38,718	439	432	871	11·33	11·15	22·49	101	......	7·10
Serampore	6	Serampore	26,196	437	365	802	16·49	13·77	30·26	119	......	14·91
	7	Ooterpara	5,510	54	51	105	9·80	9·25	19·05	105	.....	9·98
Howrah	8	Howrah	105,628	1,026	837	1,863	9·71	7·92	17·63	122	..	7·37
24-Pergunnahs	9	Suburbs of Calcutta	231,430	2,568	2,221	4,789	10·21	8·83	19·04	115	......	26·65
	10	Busirhat	20,150	372	309	681	18·19	15·11	33·30	120	...	3·68
Nuddea	11	Kishnaghur	41,582	203	208	411	4·88	5·00	9·88	97	.	22·46
	12	Santipore	24,131	317	268	585	13·13	11·10	24·24	118	......	11·89
	13	Ranaghat	13,004	95	62	157	7·30	4·76	12·07	153	.....	12·69
Jessore	14	Jessore	8,495	50	35	85	5·88	4·12	10·00	142	......	20·25
Rajshahye	15	Beauleah	19,791	163	167	330	8·23	8·43	16·67	97	......	11·72
Darjiling	16	Darjiling	7,018	27	33	60	3·84	4·70	8·54	81	......	11·12
Dacca	17	Dacca	80,161	933	751	1,684	11·63	9·36	21·00	124	......	8·70
Faridpore	18	Faridpore	10,263	96	93	189	9·35	9·06	18·41	103	....	10·68
Mymensing	19	Jamalpur	16,091	329	325	654	20·14	20·19	40·64	101	15·48	......
Tipperah	20	Comillah	13,506	242	187	429	17·91	13·84	31·76	129	5·11	......
	21	Brahmanbariah	17,543	353	263	616	20·12	14·99	35·11	134	9·52	......
Chittagong	22	Chittagong	22,130	267	187	454	12·06	8·45	20·51	142	......	5·69
Patna	23	Patna	160,237	1,770	1,490	3,260	11·10	9·29	20·40	119	.....	14·37
	24	Behar	48,971	867	737	1,604	17·70	15·04	32·75	117	·39	.....
	25	Barrh	23,610	125	107	232	5·29	4·53	9·82	116	......	3·18
	26	Mokamah	13,722	188	138	326	13·70	10·05	23·75	136	1·02	......
	27	Futwa	21,074	129	148	277	6·12	7·02	13·14	87	...	2·70
Gya	28	Gya	76,121	1,380	1,192	2,572	18·12	15·65	33·78	115	.....	17·41
Shahabad	29	Arrah	43,465	462	396	858	10·62	9·11	19·74	116	......	5·79
Mozufferpore	30	Mozufferpore	42,742	374	277	651	8·75	6·48	15·23	135	......	7·55
	31	Sitamurhi	6,125	107	121	228	17·46	19·75	37·22	88	7·54	....
Durbhanga	32	Durbhanga	66,096	645	503	1,148	9·75	7·61	17·36	128	......	8·36
Sarun	33	Chupra	53,249	546	459	1,005	10·25	8·61	18·87	118	·43	....
	34	Revilgunj	12,493	188	186	374	15·04	14·88	29·93	101	..	4·16
Chumparun	35	Bettiah	21,263	372	247	619	17·49	11·61	29·11	150	6·96	.....
Monghyr	36	Monghyr	57,520	1,003	924	1,927	17·43	16·06	33·50	108	9·25	....
	37	Jamalpur	13,563	308	286	594	22·70	21·08	43·79	107	......	2·74
	38	Shaikhpurah	12,517	140	143	283	11·18	11·42	22·60	97	...	2·80
Bhagulpore	39	Bhagulpore	57,453	1,173	1,003	2,176	20·41	17·45	37·87	116	.....	7·71
Purneah	40	Purneah	15,016	133	91	224	8·85	6·06	14·91	146	....	25·44
Cuttack	41	Kendraparah	15,697	276	235	511	17·58	14·97	32·55	117	......	1·66
	42	Jajipore	11,233	133	106	239	11·84	9·43	21·27	125	......	4·16
Poori	43	Poori	24,292	233	166	399	9·59	6·83	16·42	140	......	10·84
Lohardugga	44	Ranchi	18,443	176	137	313	9·54	7·42	16·97	128	......	1·51
Manbhum	45	Purulia	9,304	113	109	222	12·14	11·71	23·86	103	....	8·02
		TOTAL	1,653,832	20,040	17,158	37,198	12·11	10·37	22·49	116	.....	11·41

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 10th April 1883.

F. W. A. DE FABECK,
Offg. Sanitary Commissioner for Bengal.

ANNUAL FORM No. II.—*Deaths registered in the* **DISTRICTS** *of the Bengal Province during the year* 1882.

1	2	3	4	5	6			7	8			9		
Number.	DISTRICTS.	Population according to Census of 1881.	Area in square miles.	Average population per square mile.	NUMBER OF DEATHS REGISTERED.			Number of males died to every 100 deaths of females.	RATIO OF DEATHS PER 1,000 OF POPULATION.			MEAN RATIO OF DEATHS PER 1,000 DURING PREVIOUS FIVE YEARS.		
					Male.	Female.	Total.		Male.	Female.	Total.	Male.	Female.	Total.
	Burdwan Division.													
1	Burdwan	1,391,822	2,697	516·06	25,811	23,486	49,297	109	38·63	32·40	35·42	27·70	22·38	24·96
2	Bankura	1,041,752	2,621	397·46	17,312	16,247	33,559	106	34·13	30·39	32·21	15·04	12·78	13·83
3	Birbhum	794,428	1,756	452·40	14,125	13,160	27,285	107	37·01	31·87	34·34	24·00	20·93	22·84
4	Midnapur	2,517,802	5,082	495·44	27,926	24,093	52,019	115	22·44	18·91	20·66	19·23	15·28	17·23
5	Hughli	660,813	880	750·02	8,426	7,952	16,378	106	20·78	22·96	24·78	17·67	14·10	15·83
6	Serampore	351,955	343	1,026·10	3,775	3,120	6,895	120	21·64	17·56	19·59	21·70	17·37	19·51
7	Howrah	635,381	476	1,334·83	5,431	4,158	9,589	130	17·16	13·03	15·09	21·38	16·03	18·70
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	1,618,420	2,097	771·78	18,800	14,720	33,520	127	22·60	18·62	20·71	23·98	19·70	21·40
	Suburbs of Calcutta ...	251,439	23	10,932·13	6,847	4,643	11,490	147	46·51	44·54	45·60	55·87	56·40	56·12
	Total	1,869,859	2,120	882·00	25,647	19,363	45,010	132	26·29	21·64	24·07	28·80	23·10	26·07
9	Nuddea	2,017,847	3,404	592·79	42,644	36,815	79,459	115	43·28	35·65	39·37	30·52	23·90	27·13
10	Jessore	1,577,249	2,276	692·0[illegible]	25,087	21,069	46,156	119	32·17	26·42	29·26	32·24	25·49	28·83
11	Murshidabad ..	1,226,790	2,144	572·20	20,607	17,125	37,702	121	35·23	26·74	30·80	30·39	22·31	26·[illegible]
12	Khoolnah	1,079,948	2,077	519·96	13,590	12,225	25,815	111	23·90	23·89	23·90	12·45	11·19	11·93
	Rajshahye and Cooch Behar Division.													
13	Dinagepore	1,514,346	4,118	367·74	14,808	11,217	26,025	132	18·92	15·32	17·18	25·37	19·23	22·40
14	Rajshahye	1,338,638	2,361	566·98	20,205	16,375	36,580	123	30·60	24·13	27·32	27·97	20·27	24·07
15	Rungpore	2,097,964	3,486	601·83	15,758	12,553	28,311	125	14·75	12·18	13·49	16·77	12·14	14·50
16	Bogra	734,358	1,408	490·23	9,583	8,077	17,660	118	25·71	22·30	24·04	19·68	15·47	17·61
17	Pubna	1,311,728	1,847	710·19	16,664	13,963	30,627	119	25·70	21·04	23·34	14·12	10·52	12·30
18	Darjiling	155,179	1,234	125·75	686	402	1,088	171	7·71	6·00	7·01	7·88	5·91	7·04
19	Julpaiguri	581,562	2,884	201·65	5,044	3,880	8,924	156	16·50	14·05	15·34	14·01	11·59	12·86
	Dacca Division.													
20	Dacca	2,116,350	2,797	756·65	23,798	20,315	44,113	117	23·01	18·76	20·84	17·60	13·69	15·60
21	Faridpore	1,631,734	2,267	719·78	12,018	9,453	21,471	127	14·91	11·44	13·15	13·58	9·75	11·64
22	Backergunge	1,900,889	3,649	520·93	28,873	24,475	53,348	117	29·65	26·38	28·[illegible]	13·94	11·30	12·65
23	Mymensing	3,051,966	6,287	485·44	15,769	11,522	27,291	136	10·15	7·68	8·94	7·90	5·64	6·79
24	Tipperah	1,519,338	2,491	609·93	12,036	9,478	21,514	127	15·61	12·66	14·[illegible]	11·07	8·33	9·71
	Chittagong Division.													
25	Chittagong	1,132,341	2,567	441·11	12,206	10,504	22,710	116	22·95	17·48	20·05	20·17	14·23	17·02
26	Noakhalli .. .	820,772	1,641	500·17	7,821	6,810	14,631	115	18·83	16·79	17·82	22·21	19·11	20·69
	Patna Division.													
27	Patna	1,756,856	2,079	845·05	27,700	23,752	51,452	116	32·25	26·44	29·28	25·10	21·67	23·35
28	Gya	2,124,682	4,712	450·91	22,114	19,302	41,416	115	21·19	17·85	19·49	16·46	13·27	14·84
29	Shahabad	1,964,909	4,365	450·15	18,299	14,227	32,526	121	19·25	14·02	16·55	13·02	10·61	13·21
30	Mozufferpore	2,582,060	3,003	859·83	28,111	21,085	49,196	133	22·20	16·01	19·05	14·20	9·99	12·05
31	Durbhanga ...	2,633,447	3,335	789·64	25,107	19,615	44,722	127	19·37	14·66	16·98	12·77	8·48	10·59
32	Sarun	2,280,382	2,622	869·71	19,844	14,042	33,886	141	18·31	11·73	14·85	13·39	8·92	11·04
33	Chumparun	1,721,608	3,531	487·57	13,922	10,012	23,934	139	15·99	11·76	13·90	12·16	8·69	10·44
	Bhagulpore Division.													
34	Monghyr	1,969,774	3,921	502·37	16,357	12,522	28,879	131	16·87	12·51	14·60	16·54	13·15	14·82
35	Bhagulpore ..	1,966,158	4,268	460·67	21,010	17,138	38,148	122	21·46	17·36	19·40	16·63	13·06	14·64
36	Purneah	1,848,687	4,956	373·02	21,919	18,134	40,053	121	23·39	19·89	21·66	20·76	16·10	18·46
37	Maldah	710,448	1,891	375·70	8,289	6,538	14,827	126	23·88	17·98	20·86	26·00	17·50	21·65
38	Sonthal Pergunnahs ..	1,568,093	5,456	287·41	9,674	7,661	17,335	126	12·31	9·78	11·05	10·85	8·23	9·54
	Orissa Division.													
39	Cuttack	1,738,165	3,517	494·22	17,796	15,786	33,582	113	20·95	17·75	19·32	21·90	19·36	20·65
40	Poori	888,487	2,473	359·27	10,143	9,054	19,197	112	23·71	20·48	21·60	21·86	19·77	20·82
41	Balasore	945,280	2,066	457·34	13,627	12,158	25,785	112	29·53	25·12	27·27	21·29	17·58	19·39
	Chota Nagpore Division													
42	Hazaribagh	1,104,742	7,021	157·35	8,686	7,447	16,133	116	25·94	18·39	14·60	12·97	8·97	15·45
43	Lohardugga	1,609,244	12,045	133·60	15,689	13,458	29,147	110	19·69	16·56	18·11	18·41	14·87	16·63
44	Singbhum	561,96[illegible]	4,336	129·60	4,691	3,913	8,604	119	16·69	13·92	15·31	14·25	11·64	12·95
45	Maubhum	1,058,228	4,147	255·18	9,402	7,880	17,282	119	17·89	14·78	16·33	11·19	8·28	9·70
	TOTAL FOR THE PROVINCE	66,106,026	144,747	456·70	738,090	611,561	1,349,651	120	22·50	18·37	20·41	17·95	13·96	15·94

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 10th April 1883.

F. W. A. DE FABECK,
Offg. Sanitary Commissioner for Bengal.

Annual Form No. III.—*Deaths registered in the Districts of the Bengal Province during* **EACH MONTH** *of the year* 1882.

1	2	3												4
Number.	Districts.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Deaths registered during the Year.
	Burdwan Division.													
1	Burdwan	4,887	4,265	4,943	3,730	3,105	2,797	3,421	3,684	3,817	4,434	4,940	5,244	49,297
2	Bankura	3,105	2,656	2,700	2,678	2,310	1,931	2,153	2,928	2,757	3,346	3,628	3,469	33,559
3	Birbhum	2,774	2,109	2,585	2,418	1,619	1,531	1,943	2,371	2,284	2,449	2,023	2,579	27,285
4	Midnapur	5,370	4,584	4,484	3,673	3,400	3,451	3,790	3,873	3,652	4,375	5,350	6,017	52,019
5	Hughli	1,644	1,296	1,425	1,188	1,099	971	1,049	1,157	1,237	1,572	1,715	2,025	16,378
6	Serampore	565	677	619	472	407	362	403	488	563	550	778	915	6,895
7	Howrah	1,046	801	804	665	716	483	588	598	707	843	960	1,373	9,559
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	3,527	2,414	2,685	2,328	2,163	1,680	2,194	2,531	2,515	2,601	3,216	5,636	33,520
	Suburbs of Calcutta	1,065	885	912	872	971	741	686	780	836	1,009	1,121	16,12	11,490
	Total	4,592	3,299	3,597	3,200	3,134	2,421	2,880	3,311	3,381	3,610	4,337	7,248	45,010
9	Nuddea	9,067	6,409	7,795	7,020	5,301	3,353	3,257	3,819	4,949	7,262	10,231	10,096	79,459
10	Jessore	4,991	3,544	3,682	2,947	2,502	2,037	2,150	2,236	2,612	4,561	7,218	7,676	46,156
11	Murshidabad	3,363	2,901	3,372	4,294	2,545	1,889	2,122	2,668	2,938	3,590	4,459	3,012	37,792
12	Khoolnah	2,379	1,696	1,744	1,855	1,899	1,409	1,517	1,701	1,831	2,251	3,351	4,092	25,816
	Rajshahye and Cooch Behar Division.													
13	Dinagepore	2,341	1,918	1,994	2,067	2,063	1,740	1,770	1,759	2,246	2,470	2,508	3,143	26,025
14	Rajshahye	3,372	2,335	2,575	3,563	2,835	2,072	2,107	2,049	2,450	3,416	4,675	5,131	36,580
15	Rungpore	4,062	2,745	2,770	2,410	2,253	1,970	1,608	1,608	1,705	1,704	2,272	3,204	28,311
16	Bogra	1,524	1,166	1,266	1,158	1,067	1,148	1,280	1,191	1,409	2,006	2,121	2,024	17,660
17	Pubna	1,678	1,468	1,772	2,730	2,524	1,776	1,604	1,534	1,848	3,896	5,364	4,433	30,627
18	Darjiling	69	59	66	79	157	111	116	96	81	87	82	85	1,088
19	Julpaiguri	892	752	845	772	764	686	757	597	632	611	765	857	8,924
	Dacca Division.													
20	Dacca	4,374	2,621	2,978	3,132	2,472	2,078	2,085	2,681	3,078	4,090	6,361	8,173	44,113
21	Faridpore	2,233	1,442	1,773	1,045	1,542	1,016	942	1,181	1,244	1,953	3,230	2,971	21,471
22	Backergunge	4,018	3,430	4,738	5,155	5,970	3,507	3,088	2,883	3,428	3,900	5,591	6,644	53,348
23	Mymensing	2,166	1,765	1,546	1,894	1,857	1,647	1,452	1,207	1,473	1,791	3,779	6,714	27,291
24	Tipperah	2,643	1,868	1,963	1,524	1,702	1,587	1,521	1,449	1,295	1,536	1,922	2,504	21,514
	Chittagong Division.													
25	Chittagong	2,029	2,052	2,178	1,777	3,101	2,276	1,698	1,446	1,517	1,436	1,534	1,666	22,710
26	Noakhalli	1,332	1,186	1,608	1,843	1,269	1,176	1,039	1,100	1,042	1,078	1,140	1,318	14,631
	Patna Division.													
27	Patna	3,282	2,307	2,255	3,165	4,276	5,755	8,652	5,598	4,385	4,940	3,522	3,315	51,452
28	Gya	2,651	2,000	2,257	1,984	2,372	3,526	6,731	5,289	4,003	4,325	3,164	3,054	41,416
29	Shahabad	2,371	1,621	1,546	1,484	1,972	2,493	4,583	4,222	3,395	3,119	2,554	3,216	32,526
30	Mozufferpore	2,477	2,323	2,559	2,659	6,321	8,201	5,882	5,023	4,154	3,599	3,104	2,834	49,196
31	Durbhanga	2,637	2,425	2,761	3,736	7,918	7,374	4,145	3,188	2,808	2,710	2,507	2,513	44,722
32	Sarun	2,720	2,018	2,182	1,934	2,640	2,405	3,626	4,709	3,530	2,699	2,694	2,723	33,886
33	Chumparun	925	834	782	990	1,389	1,956	2,736	3,749	2,606	2,659	2,419	2,899	23,934
	Bhagulpore Division.													
34	Monghyr	2,011	1,554	1,950	2,414	4,010	4,702	2,950	2,008	1,749	1,883	1,758	1,881	28,879
35	Bhagulpore	2,045	2,017	3,431	5,366	4,622	3,615	3,434	2,668	2,367	2,544	2,987	3,052	38,148
36	Purneah	2,880	3,236	5,699	7,646	3,241	1,619	1,560	1,542	1,962	2,694	3,814	4,121	40,053
37	Maldah	1,213	955	1,200	1,441	1,102	778	729	825	945	1,589	1,962	2,148	14,827
38	Sonthal Pergunnahs	1,226	1,171	1,276	1,398	1,617	1,726	1,857	1,827	1,532	1,162	1,243	1,300	17,335
	Orissa Division.													
39	Cuttack	2,687	2,674	3,216	3,692	3,682	2,573	2,584	2,451	2,226	2,197	2,304	3,356	33,582
40	Poori	1,506	1,233	2,002	2,113	2,257	1,917	1,597	1,319	1,157	937	1,319	1,840	19,197
41	Balasore	2,501	1,873	2,613	2,545	2,867	2,183	2,239	1,840	1,412	1,510	1,848	2,354	25,785
	Chota Nagpore Division.													
42	Hazaribagh	1,058	972	1,278	1,235	1,534	1,490	1,802	1,812	1,401	1,379	1,129	931	16,133
43	Lohardugga	2,168	2,045	2,420	2,087	2,345	2,573	2,932	3,065	2,809	2,616	2,196	1,891	29,147
44	Singbhum	706	643	920	756	744	718	731	781	634	651	591	729	8,604
45	Manbhum	843	1,066	1,180	1,811	2,206	1,803	2,081	1,892	1,360	1,178	931	935	17,282
	Total for the Province ...	116,262	92,007	107,849	112,045	114,833	102,960	107,141	103,723	98,796	113,213	133,001	148,815	1,349,651
	Ratio of Deaths per 1,000 in each Month.	1·75	1·39	1·62	1·69	1·73	1·55	1·62	1·56	1·49	1·71	2·01	2·24	20·41

Office of the Sany. Commr. for Bengal,

The 10th April 1883.

F. W. A. de FABECK,

Offg. Sanitary Commissioner for Bengal.

ANNUAL FORM No. IV.—*Deaths registered according to* **AGE** *in the Districts of the Bengal Province during the year* 1882.

1	2	3		4		5		6		7		8		9		10		11		12	
		Under 1 Year.		1 and under 5 years.		5 and under 10 years.		10 and under 15 years.		15 and under 20 years.		20 and under 30 years.		30 and under 40 years.		40 and under 50 years.		50 and under 60 years.		60 years and upwards.	
Number.	Districts.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	Burdwan Division.																				
1	Burdwan	2,092	1,799	2,260	2,171	2,204	1,894	1,446	1,115	1,199	1,079	3,501	3,271	3,613	2,098	3,495	2,715	2,602	2,591	3,309	3,82[illegible]
2	Bankura	1,694	1,548	2,464	2,594	1,882	1,530	1,018	791	994	812	1,921	1,707	1,846	1,522	1,910	1,562	1,512	1,592	2,011	2,670
3	Birbhum	1,201	1,073	1,573	1,562	1,552	1,298	869	601	587	507	1,763	1,783	1,833	1,544	1,652	1,181	1,423	1,472	1,672	1,83[illegible]
4	Midnapur	2,179	1,999	2,364	2,369	1,828	1,646	1,566	1,204	1,656	1,307	3,602	3,234	4,031	3,070	3,734	2,620	3,009	2,701	3,807	3,04[illegible]
5	Hughli	763	540	609	637	613	544	350	300	617	606	1,185	1,265	1,198	1,041	1,244	940	932	947	915	1,12[illegible]
6	Serampore	381	324	316	298	262	213	195	133	210	179	540	474	590	439	511	340	394	290	373	41[illegible]
7	Howrah	588	392	553	515	375	319	307	213	310	245	780	603	650	437	612	351	412	341	814	7[illegible]
	Presidency Division.																				
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	1,755	1,349	2,342	2,121	1,891	1,422	1,548	1,191	1,141	1,037	2,270	1,891	2,230	1,471	1,993	1,280	1,492	1,095	2,132	1,83[illegible]
	Suburbs of Calcutta ..	927	730	473	486	298	244	232	177	469	326	1,580	780	1,250	558	700	371	491	359	427	60[illegible]
	Total ...	2,682	2,079	2,815	2,607	2,189	1,666	1,780	1,368	1,610	1,363	3,850	2,671	3,480	2,029	2,693	1,690	1,983	1,454	2,559	2,4[illegible]
9	Nuddea	3,111	2,627	6,090	3,916	6,219	4,828	3,287	2,221	2,353	2,078	4,297	4,080	4,291	3,316	4,387	3,151	3,533	2,983	5,143	5,58[illegible]
10	Jessore	1,651	1,182	2,933	2,831	3,208	2,183	1,945	1,539	1,780	1,485	2,578	2,417	2,843	2,118	2,657	1,966	2,404	1,895	3,088	2,83[illegible]
11	Murshidabad ...	1,698	1,390	2,107	2,094	2,281	1,667	1,611	1,023	1,398	968	2,896	2,200	2,608	1,923	2,233	1,784	1,642	1,538	2,131	2,51[illegible]
12	Khoolnah	1,180	1,250	1,702	1,673	1,389	1,045	950	820	1,008	1,194	1,504	1,733	1,510	1,301	1,242	967	1,187	918	1,578	1,31[illegible]
	Rajshahye and Cooch Behar Division.																				
13	Dinagepore	1,310	1,029	913	788	1,001	787	799	634	803	656	1,938	1,865	2,651	1,861	2,452	1,409	1,583	1,075	1,358	1,10[illegible]
14	Rajshahye	1,030	988	2,487	2,473	2,627	1,854	1,625	1,112	1,244	1,078	2,836	2,611	3,026	2,273	2,604	1,608	1,419	1,135	1,357	1,24[illegible]
15	Rungpore	761	588	1,276	1,023	1,111	827	877	688	1,000	1,035	2,042	2,110	2,676	2,006	2,331	1,508	1,576	1,144	2,075	1,62[illegible]
16	Bogra	1,363	1,017	1,121	1,154	857	611	527	480	620	737	1,002	1,160	1,288	908	1,078	686	793	612	851	71[illegible]
17	Pubna	1,237	945	2,472	2,279	1,825	1,153	1,038	812	819	804	1,654	1,728	2,162	1,508	1,076	1,246	1,427	1,073	2,054	2,11[illegible]
18	Darjiling	46	14	61	45	41	34	27	21	60	48	185	75	122	44	68	37	40	29	33	3[illegible]
19	Julpaiguri ..	513	464	450	418	255	180	343	264	428	379	652	608	816	524	684	433	588	426	285	17[illegible]
	Dacca Division.																				
20	Dacca	3,248	2,620	3,310	3,017	2,134	1,642	1,242	901	931	1,004	2,144	2,608	2,635	2,097	2,395	1,490	1,783	1,229	3,081	3,69[illegible]
21	Faridpore ...	749	585	1,551	1,435	1,134	828	687	503	490	527	1,313	1,489	1,788	1,305	1,190	810	1,142	730	1,715	[illegible]
22	Backergunge	5,581	4,376	4,121	3,421	2,724	2,098	1,379	1,035	1,037	1,438	2,522	3,347	2,710	2,212	2,462	1,811	2,214	1551	4,123	3,38[illegible]
23	Mymensing	1,097	827	1,240	1,098	1,091	819	1,020	793	815	702	1,520	1,506	2,365	1,703	2,334	1,378	1,814	1,075	2,473	1,71[illegible]
24	Tipperah	1,641	1,181	930	861	943	762	625	543	668	675	1,321	1,396	1,630	1,187	1,333	773	907	550	2,038	1,55[illegible]
	Chittagong Division.																				
25	Chittagong	1,312	1,007	1,423	1,393	1,097	980	668	513	746	677	1,389	1,406	1,520	1,207	1,336	891	1,143	765	1,566	1,62[illegible]
26	Noakhalli	1,270	1,070	952	927	616	551	414	279	358	425	720	925	910	777	713	479	675	379	1,213	90[illegible]
	Patna Division.																				
27	Patna	5,171	4,211	4,601	4,250	2,167	1,577	1,265	901	925	681	2,606	2,220	2,228	1,790	2,577	2,031	2,559	2,216	3,601	3,80[illegible]
28	Gya	2,378	2,041	3,437	3,060	1,946	1,390	1,078	887	1,109	1,085	2,184	2,026	2,321	2,042	2,342	1,933	2,457	2,153	2,805	2,68[illegible]
29	Shahabad	2,496	1,912	2,023	1,673	1,494	905	955	614	717	544	2,089	1,561	3,155	1,449	1,936	1,309	1,696	1,350	2,738	2,78[illegible]
30	Mozufferpore ...	1,555	1,304	3,990	3,434	2,514	1,737	1,612	1,004	1,527	841	4,340	3,003	3,640	2,428	3,250	2,187	2,803	2,330	2,865	2,817
31	Durbhanga	1,347	1,146	4,418	3,783	3,036	1,918	1,154	971	845	621	3,595	3,013	3,158	2,232	2,451	1,758	2,275	1,841	2,528	2,332
32	Sarun	1,628	1,014	2,263	1,671	1,361	683	1,101	710	1,190	779	2,504	1,648	2,640	1,801	2,323	1,646	2,282	1,679	2,476	2,112
33	Chumparun	1,016	804	1,703	1,300	1,105	763	738	474	530	347	2,194	1,665	2,056	1,397	1,015	1,020	1,099	803	1,747	1,48[illegible]
	Bhagulpore Division.																				
34	Monghyr	1,142	1,215	2,111	1,953	1,684	1,040	938	555	723	493	1,951	1,568	1,913	1,313	1,779	1,151	1,813	1,511	1,803	1,733
35	Bhagulpore	2,093	1,794	2,805	2,559	1,879	1,380	1,086	788	671	518	3,407	2,744	3,329	2,296	2,009	1,890	1,850	1,593	1,301	1,561
36	Purneah	1,126	1,012	2,054	1,858	1,850	1,318	1,066	1,164	1,350	1,239	4,109	3,015	3,825	2,696	2,601	1,794	1,628	1,490	1,704	1,93[illegible]
37	Maldah . ..	640	527	1,093	1,046	891	623	641	297	330	322	1,182	1,012	1,181	796	805	503	564	456	872	69[illegible]
38	Sonthal Pergunnahs ...	1,063	871	1,590	1,369	1,030	797	646	424	531	429	1,102	954	1,044	741	840	545	650	580	1,160	94[illegible]
	Orissa Division.																				
39	Cuttack	3,050	2,605	2,098	1,867	1,472	1,178	978	905	830	818	2,071	1,884	1,998	1,562	1,658	991	1,465	1,188	2,207	2,72[illegible]
40	Poori	1,028	1,728	1,108	1,097	712	634	425	403	457	482	1,114	1,105	1,187	857	1,035	594	938	797	1,239	1,377
41	Balasore	2,504	2,264	1,929	1,800	1,032	926	601	518	537	525	1,506	1,269	1,014	1,264	1,383	823	1,140	954	1,321	1,725
	Chota Nagpore Division																				
42	Hazaribagh	1,262	1,121	1,513	1,320	729	607	368	280	234	205	923	848	1,004	747	858	630	858	788	942	90[illegible]
43	Lohardugga ..	3,219	2,588	3,130	2,703	743	513	659	463	622	759	1,525	1,450	1,540	1,277	1,337	1,010	1,227	1,158	1,478	1,41[illegible]
44	Singbhum	682	558	630	673	373	320	224	171	274	247	475	380	660	348	538	548	464	344	471	[illegible]
45	Manbhum	1,213	970	1,443	1,425	839	679	624	372	623	419	1,037	926	1,045	717	933	564	731	658	1,001	[illegible]
	TOTAL FOR THE PROVINCE	70,579	63,125	92,111	84,184	68,834	51,038	43,722	31,833	37,861	33,337	80,805	81,247	93,290	69,115	82,682	56,770	66,055	54,405	86,061	85,30[illegible]
	RATIO PER 1,000 LIVING *	99·45	80·59	23·30	19·94	13·36	10·83	11·65	10·59	15·26	13·11	17·33	13·75	19·19	14·75	25·63	17·92	35·44	26·84	55·02	39·8[illegible]

* These ratios have been calculated on the total population of the Province less 34,097 whose Ages have not been specified in the Census table.

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 10th April 1883.

F. W. A. DEFABECK,
Offg. Sanitary Commissioner for Bengal.

Annual Form No. V.—*Deaths registered according to* **CLASS** *in the Districts of the Bengal Province during the year* 1882.

1	2	3						4						5					
		Population according to Census of 1881.						Number of Deaths registered.						Ratio of Deaths per 1,000 of Population.					
Number.	Districts.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.*	Total.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.	Total.
	Burdwan Division.																		
1	Burdwan	910	1,120,676	263,816	...	6,421	1,391,823	8	39,195	8,934	...	860	49,297	8·79	35·24	33·86	...	133·93	35·42
2	Bankura	56	910,815	46,274	...	84,577	1,041,752	3	31,662	1,728	...	760	33,559	53·57	34·10	37·34	...	9·05	32·21
3	Birbhum	48	617,310	162,621	..	14,149	794,428	3	22,036	5,692	.	154	27,285	62·50	35·69	31·31	...	10·05	34·34
4	Midnapur	740	2,235,535	161,003	36	117,488	2,517,802	14	46,958	2,798	...	2,249	52,019	18·91	21·00	17·06	...	19·14	20·66
5	Hughli	290	530,798	129,700	2	23	650,813	4	12,865	3,500	...	......	16,378	13·79	24·23	27·05	...	...	21·78
6	Serampore	365	292,174	59,098	288	30	351,955	7	5,874	1,014	...	......	6,895	19·17	20·17	17·15	...	...	19·59
7	Howrah	2,051	500,870	132,118	37	305	635,381	8	7,665	1,916	..	......	9,589	3·90	15·30	14·50	...	...	15·09
	Presidency Division.																		
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	9,928	1,003,110	604,723	230	429	1,618,420	112	20,825	12,553	...	...	33,520	14·30	20·76	20·75	...	...	20·71
	Suburbs of Calcutta ...	4,048	149,930	96,583	127	751	251,439	224	7,350	3,916	...	......	11,490	55·33	49·02	40·54	...	...	45·69
	Total ..	13,976	1,153,040	701,306	357	1,180	1,869,859	366	28,175	16,469	...	.	45,010	26·18	24·43	23·48	...	...	24·07
9	Nuddea	6,440	864,773	1,146,603	1	30	2,017,847	184	34,547	44,728	..	......	79,459	28·57	39·94	39·00	...	...	39·37
10	Jessore	474	631,439	945,297	..	39	1,577,249	6	19,591	26,559	...	....	46,156	12·65	31·02	27·03	...	..	29·26
11	Murshidabad	470	634,796	589,957	1	1,560	1,226,790	3	20,382	17,348	..	59	37,792	6·38	32·10	29·40	...	37·67	30·80
12	Khoolnah	747	523,657	555,544	...	......	1,079,948	5	12,151	15,050	..	....	25,815	6·69	23·20	24·58	...	...	23·90
	Rajshahye and Cooch Behar Division.																		
13	Dinagepore	457	716,630	795,824	...	1,435	1,514,346	3	11,178	14,665	...	184	26,025	6·56	15·17	18·42	...	128·22	17·18
14	Rajshahye	121	288,749	1,049,700	55	13	1,338,638	..	7,213	29,367	...	..	36,580	..	24·98	27·97	...	...	27·32
15	Rungpore	86	816,582	1,279,605	60	1,081	2,097,964	6	10,345	17,796	..	164	28,311	69·76	12·66	13·90	...	97·56	13·49
16	Bogra	27	140,860	593,411	2	58	734,358	1	3,287	14,372	...	......	17,660	37·03	23·34	24·21	...	..	24·04
17	Pubna	114	361,479	940,908	1	226	1,311,728	...	8,878	21,742	...	7	30,627	..	24·56	22·88	..	30·97	23·34
18	Darjiling	842	126,717	8,204	18,775	641	155,179	20	828	99	122	19	1,088	23·75	6·53	12·06	6·49	29·64	7·01
19	Julpaiguri	159	367,891	208,513	486	4,513	581,562	2	5,576	3,346	...	.....	8,924	12·57	15·16	16·04	...	...	15·34
	Dacca Division.																		
20	Dacca	8,799	856,680	1,250,687	49	135	2,116,350	171	19,175	24,766	..	1	44,113	19·43	22·38	19·80	..	7·40	20·84
21	Faridpore	2,741	653,992	974,983	13	5	1,631,734	22	9,125	12,324	...	......	21,471	8·02	13·95	12·64	...	...	13·15
22	Backergunge	3,717	624,597	1,267,694	4,797	84	1,900,889	66	15,231	37,914	107	...	53,318	17·75	24·38	29·93	22·30	...	28·06
23	Mymensing	151	987,355	2,038,505	...	25,935	3,051,966	1	10,524	16,510	...	256	27,291	6·62	10·66	8·09	...	9·86	8·94
24	Tipperah	199	511,025	1,007,740	374	......	1,519,338	3	7,832	13,674	...	5	21,514	15·07	15·33	13·56	...	13·36	14·16
	Chittagong Division.																		
25	Chittagong	1,055	275,177	801,986	54,110	13	1,132,341	17	5,262	17,131	..	......	22,710	16·11	19·12	21·73	...	...	20·05
26	Noakhalli	588	211,476	608,592	114	2	820,772	11	3,419	11,200	1	....	14,631	18·70	16·16	18·40	8·77	...	17·82
	Patna Division.																		
27	Patna	2,588	1,541,061	2,13,141	...	66	1,756,856	25	46,008	5,419	...	......	51,452	9·65	29·85	25·42	...	...	29·28
28	Gya	96	1,891,484	233,098	...	4	2,124,682	1	36,896	4,519	...	......	41,416	10·41	19·50	19·38	...	...	19·49
29	Shahabad	276	1,817,881	146,732	...	20	1,964,909	10	29,961	2,555	..	......	32,526	36·23	16·48	17·41	...	..	16·55
30	Mozufferpore	372	2,265,380	316,308	...	......	2,582,060	3	43,865	5,328	...	......	49,196	8·06	19·36	16·84	...	...	19·05
31	Durbhanga	825	2,323,970	308,985	...	158	2,633,447	4	39,890	4,828	...	......	44,722	12·30	17·16	15·62	...	...	16·98
32	Sarun	282	2,010,958	269,142	...	......	2,280,382	3	30,478	3,405	..	......	33,886	10·63	15·15	12·65	...	...	14·85
33	Chumparun	1,936	1,476,985	242,687	...	......	1,721,608	64	20,858	3,012	...	......	23,934	33·05	14·12	12·41	...	...	13·90
	Bhagulpore Division.																		
34	Monghyr	1,091	1,774,013	187,517	...	7,153	1,969,774	10	25,988	2,881	...	...	28,879	9·16	14·64	15·36	...	...	14·66
35	Bhagulpore	678	1,764,304	185,533	...	15,743	1,966,158	9	34,632	3,482	...	25	38,148	15·57	19·62	18·77	...	1·58	19·40
36	Purneah	327	1,076,539	771,130	...	691	1,848,687	6	24,991	15,053	...	3	40,053	18·34	23·02	19·52	...	4·34	21·66
37	Maldah	26	379,153	329,525	...	1,744	710,448	2	8,317	6,495	...	13	14,827	76·92	21·93	16·07	...	7·45	20·86
38	Sonthal Pergunnahs ...	3,057	847,590	108,809	132	608,415	1,568,003	7	10,567	1,845	...	4,916	17,335	2·28	12·46	16·94	...	45·14	11·05
	Orissa Division.																		
39	Cuttack	2,331	1,687,608	47,259	3	964	1,738,165	17	33,013	552	...	.....	33,582	7·29	19·05	11·68	...	...	19·32
40	Poori	819	873,664	14,003	...	1	888,487	7	18,972	218	...	...	19,197	8·54	21·71	15·56	...	...	21·60
41	Balasore	815	915,792	23,894	4	4,865	945,280	16	25,245	468	...	56	25,785	19·63	27·56	19·66	...	11·51	27·27
	Chota Nagpore Division.																		
42	Hazaribagh	552	924,811	106,097	...	73,282	1,104,742	...	14,586	1,353	...	194	16,133	...	15·77	12·75	...	2·64	14·60
43	Lohardugga	36,281	868,842	77,403	1	626,717	1,609,244	301	12,129	1,313	...	15,404	29,147	8·29	13·96	16·96	...	24·57	18·11
44	Singhbhum	2,968	555,046	3,282	...	648	561,964	8	8,529	67	...	... ..	8,604	2·68	15·36	20·41	...	...	15·31
45	Manbhum	552	946,347	45,453	23	65,953	1,058,228	7	15,050	724	...	1,492	17,282	12·68	15·91	15·92	...	22·62	16·33
	Total for the Province	100,915	42,896,410	21,861,687	79,721	1,607,293	66,106,026	1,434	878,053	142,507	230	20,827	1,349,051	14·20	20·48	20·71	2·88	16·09	20·41

* Aboriginal tribes chiefly; also some aboriginal tribes and mixed and impure tribes among Hindus who are not recognized as Hindus.

Office of the Sany. Commr. for Bengal,
The 10th April 1883.

F. W. A. deFABECK,
Offg. Sanitary Commissioner for Bengal.

ANNUAL FORM No. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	DISTRICTS.					
	Burdwan Division.					
1	Burdwan	1,335,905	5,072	13	38,762	583
2	Bankura	989,106	1,751	47	25,959	702
3	Birbhum	786,580	2,577	13	21,697	158
4	Midnapur	2,448,138	3,386	684	38,527	3,844
5	Hughli	591,418	518	2	11,679	1,197
6	Serampore	305,231	409	2	3,691	568
7	Howrah	520,753	739	6	3,566	1,547
	Presidency Division.					
8	24-Pergunnahs	1,424,320	3,415	22	21,654	1,018
9	Nuddea	1,023,682	10,606	16	58,694	1,149
10	Jessore	1,568,754	9,534	6	83,898	383
11	Murshidabad	1,143,106	8,344	89	29,608	326
12	Khoolnah	1,071,210	3,215	5	19,970	257
	Rajshahye and Cooch Behar Division.					
13	Dinagepore	1,501,786	213	15	23,476	232
14	Rajshahye	1,318,847	2,748	1	32,059	55
15	Rungpore	2,084,644	1,708	3	23,878	304
16	Bogra	728,179	1,453	1	14,308	67
17	Pubna	1,275,424	4,836	3	23,099	301
18	Darjiling	148,161	55	5	679	114
19	Julpaiguri	573,615	29	7	7,855	58
	Dacca Division.					
20	Dacca	2,012,330	5,558	154	26,159	2,548
21	Faridpore	1,621,471	4,910	382	13,805	707
22	Backergunge	1,887,703	8,506	587	31,857	640
23	Mymensing	3,004,853	5,850	638	16,011	089
24	Tipperah	1,488,289	2,529	584	14,513	389
	Chittagong Division.					
25	Chittagong	1,110,211	2,681	1,177	13,324	581
26	Noakhalli	815,648	256	652	11,677	207
	Patna Division.					
27	Patna	1,437,017	4,414	161	25,937	8,837
28	Gya	2,038,691	4,261	134	20,345	531
29	Shahabad	1,885,041	3,314	18	23,072	849
30	Mozufferpore	2,490,715	11,704	521	24,664	3,067
31	Durbhanga	2,567,351	10,581	633	25,402	3,044
32	Sarun	2,201,333	3,367	152	11,247	4,216
33	Chumparun	1,700,345	5,283	581	11,855	426
	Bhagulpore Division.					
34	Monghyr	1,886,174	5,098	463	19,875	286
35	Bhagulpore	1,908,705	7,273	755	24,948	521
36	Purneah	1,833,671	8,777	28	20,758	177
37	Maldah	698,018	1,036	77	12,722	19
38	Southal Pergunnahs	1,560,088	1,735	53	13,877	337
	Orissa Division.					
39	Cuttack	1,667,906	6,900	1,715	12,100	2,879
40	Poori	884,195	3,459	907	4,745	1,985
41	Balasore	925,015	6,781	740	7,204	5,814
	Chota Nagpore Division.					
42	Hazaribagh	1,089,436	152	114	13,032	600
43	Lohardugga	1,590,801	109	444	21,542	2,747
44	Singbhum	555,958	65	98	6,013	963
45	Manbhum	1,048,924	1,245	95	11,918	1,270
	TOTAL OF DISTRICTS ...	63,639,056	170,522	12,798	891,151	51,662
	TOWNS.					
	Burdwan District.					
1	Burdwan	34,080	88	......	1,083	178
2	Culna	10,901	24	......	159	28
3	Ranigunge	10,937	92	......	169	107
	Bankura District.					
4	Bankura	18,747	95	9	316	59
5	Bishenpore	21,283	27	2	792	27
6	Sonamukhi	12,616	81	5	441	6
	Birbhum District.					
7	Soori	7,848	16	......	248	17
	Midnapur District.					
8	Midnapur	33,560	32	......	470	219
9	Ghattal ...	12,638	30	2	157	40
10	Chandrakona	12,257	11	......	238	37
11	Ramjibanpore...	10,909	1	......	284	23

Districts and principal Towns of the Bengal Province during the year 1882.

8					9	10	11								12
INJURY						TOTAL DEATHS FROM ALL CAUSES	RATIO OF DEATHS PER 1 000 OF POPULATION								
SUICIDE													FROM ALL CAUSES		
Male	Female	Wounding or accident	Snake bite or killed by wild beasts.	Total.	All other causes.		Cholera	Small pox	Fevers	Bowel complaints	Injury	All other causes	For the year	Mean of previous five years	Number
26	27	73	125	251	2 226	40 907	3 79	009	[illegible] 01	43	18	1 66	35 11	24 41	1
9	12	64	97	182	2 020	31 261	1 77	14	[illegible]	70	18	2 04	31 60	13 40	2
8	8	90	70	176	[illegible]	[illegible]	3 27	01	2 8	20	22	2 07	34 28	22 60	3
16	19	182	438	[illegible]	3,1[illegible]7	[illegible] 81	1 38	27	15 7[illegible]	1 [illegible]	6	1 30	20 [illegible]	16 90	4
13	22	67	89	191	785	14 372	57	003	[illegible]	[illegible]02	[illegible]	1 2	24 30	15 1[illegible]	5
2	6	45	44	91	417	5 178	1 43	003	[illegible]	1 56	2[illegible]	30	16 36	10·64	6
20	35	121	128	304	780	6 948	1 79	01	6 73	92	07	1 48	13 11	17 97	7
29	46	306	335	718	1 751	28 [illegible]	2 39	01	15 20	71	[illegible]0	1 22	20 06	21 61	8
91	110	208	[illegible]3	1 028	4 [illegible]21	[illegible] 114	5 51	008	[illegible]	[illegible]	3	55	[illegible] 72	[illegible]	9
49	60	234	905	[illegible]08	1 [illegible]	[illegible]	[illegible] 7	003	21 60	24	[illegible]	87	[illegible]	[illegible]	10
90	33	104	[illegible]	[illegible]06	1 201	3 074	2 [illegible]	07	[illegible]	8	44	1 0	30 [illegible]	2[illegible] 74	11
20	44	148	212	504	1 594	25 545	3 00	004	18 64	23	47	1 48	23 84	11 93	12
3	9	131	213	396	1 4[illegible]2	2 7[illegible]	14	009	1 63	15	25	98	17 16	22 39	13
33	[illegible]3	17[illegible]	2[illegible]8	536	[illegible]19	36 018	[illegible]08	[illegible]	1 30	01	[illegible]	16	2[illegible] 91	[illegible]83	14
4	9	2[illegible]	210	457	1 588	2[illegible]	44	001	11 [illegible]	14	1	76	13 42	14 41	15
8	13	7[illegible]	173	2[illegible]	1 344	17 [illegible]	1 [illegible]	001	[illegible]	0[illegible]	37	1 [illegible]	2[illegible]	17 [illegible]9	16
17	[illegible]	113	21[illegible]	[illegible]08	1 0[illegible]	29 7 7	3 79	0[illegible]	18 11	[illegible]3	1	8[illegible]	[illegible]3 30	12 19	17
1	1	30	7	31	78	[illegible]0	37	03	[illegible] 8	[illegible]	[illegible]	39	[illegible] 41	5 85	18
2	5	48	36	93	[illegible]31	8 573	05	01	13 69	10	16	92	14 94	12 18	19
41	62	135	179	396	6 066	40 981	2 76	07	13 03	1 [illegible]6	19	3 02	20 37	15 34	20
11	67	1[illegible]2	175	[illegible]	[illegible]8	21 117	[illegible]0	[illegible]	8 1	44	[illegible]1	[illegible]	13 02	11 45	21
35	40	710	181	1 005	10 479	5[illegible]0 4	[illegible] 0	31	1[illegible]	[illegible]	[illegible]	5 [illegible]	[illegible] 10	12 60	22
2[illegible]	10	1 9	211	4 5	[illegible]839	[illegible] 2	1 84	[illegible]1	[illegible]	[illegible]	14	[illegible]	8 78	6 47	23
13	10	287	59	369	2 3[illegible]1	20 706	1 [illegible]	[illegible]	9 7	[illegible]6	[illegible]	1 [illegible]5	13 91	9 60	24
6	5	459	48	517	3 9[illegible]0	22 130	2 41	1 06	12 00	[illegible]	46	3 46	19 93	17 03	25
4	6	263	64	327	1 423	14 [illegible]51	32	7[illegible]	14 31	[illegible]	40	1 74	17 [illegible]	20 31	26
21	62	[illegible]9	214	656	7 225	42 730	3 07	11	18 [illegible]4	2 32	15	5 02	[illegible]73	22 03	27
20	36	4[illegible]1	263	789	2 193	37 [illegible]	08	01	14 [illegible]	[illegible]	18	1 0	18 27	14 00	28
21	27	2[illegible]0	105	403	2 876	30 592	1 7[illegible]	009	1 3	[illegible]	1	1 2	16 18	11 62	29
11	21	[illegible]18	695	1,245	5 984	47 18[illegible]	4 [illegible]	0	9 30	1 [illegible]	[illegible]	2 [illegible]	18 [illegible]	11 73	30
23	2	3[illegible]5	5 8	928	2 434	4[illegible]0[illegible]2	4 11	24	9 83	1 18	3	94	16 [illegible]	1[illegible] 46	31
16	25	309	214	659	12 510	12 115	1 52	03	5 10	1 1 1	[illegible]	[illegible]	14 [illegible]0	10 52	32
2	19	331	282	634	4 681	23 [illegible]	3 10	34	6 97	[illegible]	[illegible]7	[illegible]	13 79	10 [illegible]9	33
12	14	177	311	514	709	26 335	2 70	94	10 27	1[illegible]	[illegible]7	12	14 06	14 08	34
8	1	218	285	507	1 [illegible] 5	35 52[illegible]	3 31	[illegible]	1 07	27	[illegible]	[illegible]	18 [illegible]1	1[illegible] 13	35
11	25	192	159	377	2[illegible]5	39 102	1 73	01	1[illegible]	03	3	1[illegible]	[illegible] 18	18 31	36
5	3	41	133	182	4 [illegible]	14 480	1 48	11	18 [illegible]2	0[illegible]	[illegible]	[illegible]	[illegible]0 5	21 3[illegible]	37
9	8	21	105	146	9,[illegible]1	17,119	1 11	03	5 89	21	09	6[illegible]	10 97	9 56	38
50	107	387	260	804	7 496	31 894	4 13	1 02	7 25	1 73	18	4 40	19 12	20 47	39
45	43	201	95	384	6,326	17 806	4 00	1 04	5 19	2 2[illegible]	14	7 32	[illegible]	19 [illegible]	40
35	63	178	143	419	5,127	25,175	6 24	7[illegible]	7 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	19 23	41
10	20	169	88	287	747	15 892	13	10	12 [illegible]	[illegible]	2[illegible]	[illegible]	1[illegible] 73	11 [illegible]	42
10	10	198	2[illegible]6	444	3 520	28 806	06	27	13 54	1 [illegible]2	[illegible]7	1	1[illegible] 1[illegible]	16 37	43
45	41	20	106	221	1 037	8,393	11	16	10 81	1 [illegible]3	[illegible]	1 8[illegible]	1 0[illegible]	1[illegible]	44
8	2	72	99	181	2,268	16 977	1 18	09	11 36	1 [illegible]1	17	2 16	16 18	[illegible]	45
881	1,399	9,207	9,173	20,660	126,257	1,273 050	2 67	[illegible]0	14 00	91	32	1 [illegible]	6 00	1[illegible] 37	
2	2	12	4	20	818	1 683	2 [illegible]8		31 77	5 07	8	9 [illegible]	[illegible]	[illegible] 75	1
		4		4	75	290	2 [illegible]0		14 [illegible]	2 [illegible]	[illegible]	0 [illegible]	[illegible]	[illegible]2	2
		5		5	45	418	8 41		1[illegible] [illegible]5	9 78	[illegible]	4 11	[illegible] 1	30 6[illegible]	3
2		1	1	4	215	698	5 06	48	18 85	3 14	21	11 [illegible]	37 [illegible]	2[illegible] [illegible]9	4
...		6		6	191	1 043	1 [illegible]6	09	3[illegible] [illegible]1	1 [illegible]	2[illegible]	[illegible]	4[illegible] 10	[illegible]83	5
			4	4	18	555	6 43	39	34 95	47	31	1 4[illegible]	4[illegible] 90	24 61	6
...	...	3	..	3	36	320	2 03		31 00	2 13	[illegible]8	4 5[illegible]	40 77	56 03	7
1	1	4	..	6	170	807	06		14 00	6 32	17	[illegible]06	2[illegible] 72	1 [illegible]0	8
...	..	...	2	2	20	251	2 37	15	12 42	8 16	15	1 [illegible]	1[illegible]	[illegible]	9
..	..	7	1	3	27	321	[illegible]		12 41	3 01	66	2 0	[illegible] 15	1 3	10
...	..	2	...	2	6	269	09		21 45	2 [illegible]8	18	5[illegible]	[illegible]	30 0[illegible]	11

ANNUAL FORM NO. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	TOWNS—*continued.*					
	Hughli District.					
12	Hughli	38,718	91	4	540	238
13	Jehanabad	10,507	15	......	227	13
14	Khanacool	7,708	8	......	117	28
15	Shambazar	12,462	12	......	414	7
	Serampore District.					
16	Serampore	28,498	287	1	461	220
17	Boidobatti	14,718	93	......	136	43
18	Ooterpara	5,510	40	......	40	31
	Howrah District.					
19	Howrah	105,628	668	2	1,068	527
	24-Pergunnahs District.					
20	Suburbs of Calcutta	251,489	2,470	25	4,313	1,759
21	South Suburban	51,658	144	3	665	154
22	Augurpara	22,739	114	1	401	43
23	Nawabgunge	18,018	36	5	287	20
24	Busirhat	20,450	74	....	504	9
25	Baranagore	29,982	204	......	408	178
26	Rajpore	10,576	67	1	154	6
27	Naihatti	21,533	69	.....	486	30
28	Badaria	19,135	29	......	278	10
	Nuddea District.					
29	Kishnaghur	41,582	182	......	916	54
30	Santipore	24,131	60	......	784	14
31	Kushtia	9,717	84	......	118	14
32	Ranaghat	13,004	9	......	211	8
33	Meherpore	5,731	79	......	179	2
	Jessore District.					
34	Jessore	8,405	23	......	102	22
	Murshidabad District.					
35	Berhampur	23,605	56	5	947	17
36	City Murshidabad	39,231	90	......	1,337	14
37	Kandi	10,661	10	......	286	11
38	Jungipur	10,187	83	......	243	6
	Khoolnah District.					
39	Satkhira	8,738	84	......	174	3
	Dinagepore District.					
40	Dinagepore	12,560	1	......	172	17
	Rajshahye District.					
41	Beauleah	19,701	41	......	301	50
	Rungpore District.					
42	Rungpore	13,320	2	1	245	18
	Bogra District.					
43	Bogra	6,179	8	......	170	
	Pubna District.					
44	Serajgunge	21,037	217	......	278	19
45	Pubna	15,267	70	1	198	13
	Darjiling District.					
46	Darjiling	7,018	......	......	84	28
	Julpaiguri District.					
47	Julpaiguri	7,947	4	......	283	31
	Dacca District.					
48	Dacca	80,161	597	......	869	888
49	Narayangunge	12,501	128	1	101	80
50	Manickgunge	11,289	120	......	327	6
	Faridpore District.					
51	Faridpore	10,263	128	......	198	7
	Backergunge District.					
52	Barisal	13,186	64	18	187	28
	Mymensing District.					
53	Jamalpur	16,091	39	1	264	9
54	Kishoregunge	12,893	55	1	148	19
55	Tangail	18,124	74	1	91	4
	Tipperah District.					
56	Comillah	13,506	72	1	191	18
57	Brahmanbariah	17,543	64	1	291	2

Districts and principal Towns of the Bengal Province during the year 1882—continued.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.		Wounding or accident.	Snake-bite or killed by wild beasts.	Total.	All other causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other causes.	FROM ALL CAUSES.		Number.
Male.	Female.												For the year.	Mean of previous five years.	
...	2	7	3	12	261	1,146	2·35	·10	13·94	6·14	·30	6·74	29·59	21·78	12
...	...	......	......	......	12	267	1·42	...	21·60	1·23	......	1·14	25·41	15·18	13
...	...	2	......	2	5	158	1·03	...	15·17	3·37	·25	·04	20·49	14·27	14
...	...	......	1	1	1	435	·96	...	33·22	·56	·08	·08	34·90	37·69	15
4	3	11	3	21	207	1,197	10·83	·03	17·39	8·30	·79	7·81	45·17	43·27	16
...	...	1	2	3	85	360	6·31		9·24	2·92	·28	5·77	24·46	79·18	17
...	...	1	1	2	47	160	7·25	.	7·25	5·62	·36	8·52	29·03	48·85	18
4	2	20	13	48	328	2,641	6·32	·01	10·11	4·98	·45	3·10	25 00	21·96	19
2	6	45	5	58	2,865	11,490	9·82	·09	17·15	6·99	·23	11·39	45·69	56·12	20
1	...	7	6	14	96	1,076	2·78	·05	12·87	2·98	·27	1·85	20·82	15·63	21
2	3	1	3	9	51	619	5 01	·04	17·03	1·89	·39	2·24	27·22	27·70	22
1	..	1	3	5	14	367	1·99	·27	15·92	1 11	·27	·77	20·36	24·26	23
...	1	6	2	9	70	758	3·61	.	29·04	·44	·44	3·42	30·96	21·97	24
1	...	14	4	19	81	888	6·80	.	13·54	5·93	·63	2·70	29·61	18 02	25
1	2	1	2	6	20	254	6·33	·09	14·56	·56	·56	1·89	24·01	22·39	26
3	...	1	3	7	45	646	3·20	...	22 57	1·81	·32	2·08	30·00	28·10	27
1	2	......	...	3	18	338	1·51	..	14·52	·52	·15	·94	17·66	15·66	28
1	5	6	1	13	160	1,345	4·37	.	22·74	1·29	·81	3·60	32·34	24·04	29
2	2	2	8	14	20	872	2·48	...	31·66	·58	·58	·82	36·13	37·52	30
1	...	3	......	4	4	224	8·64	.	12 14	1·44	·41	·41	23 05	8·90	31
1	2	5	2	10	84	322	·69	. .	16·22	·61	·76	6·45	24·70	25·29	32
...	...	1	.....	1	21	282	13·78	. .	31·23	·34	·17	3·66	49·20	51·04	33
1	...	3	....	4	16	257	2·70	...	22·60	2·58	·47	1·88	30·25	52·21	34
4	...	1	1	6	35	566	2·37	·21	18·93	·72	·25	1·48	23·97	24·57	35
...	1	2	5	8	37	1,486	2·29	...	34 08	·35	·20	·94	37·87	30·26	36
...	1	5	3	9	10	328	·93	...	26·83	1·03	·84	·03	30·57	30·37	37
...	...	3	1	4	4	340	8·14	...	23·85	·58	·39	·39	33·37	34·75	38
...	...	4	1	5	4	270	0·61	...	19·91	·34	·57	·45	30·89	No data	39
1	1	3	.....	5	56	251	·07	..	13·69	1·35	·39	4·45	19·98	23·67	40
...	1	4	1	6	74	502	2·07	...	19·75	2·52	·30	3·73	28·39	39·78	41
2	...	4	1	7	42	315	·16	·07	18·30	1·35	·52	3·15	23·64	27·95	42
...	..	.....	.....	......	21	224	1·29	...	28·96	2·58	......	3·39	36·25	54·99	43
...	...	1	6	7	59	580	10·31	...	13·21	·90	·33	2·80	27·57	13·58	44
...	...	4	2	6	32	320	4·58	·06	12·98	·85	·39	2·09	20·93	21·11	45
2	...	5	......	7	19	138	...	...	11·96	3·98	·09	2·70	19·66	32·11	46
...	...	3	......	3	30	351	·50	...	35·01	3·00	·37	3·77	14·16	40·77	47
4	1	8	1	14	889	2,391	6·57	...	7·02	4·84	·17	11·09	29·70	21·56	48
...	...	......	......	......	75	355	7·57	·05	5·97	2·95	......	4·43	21·01	20·19	49
...	1	......	2	3	39	406	9·55	...	25·82	·47	·23	3·07	39·16	18·80	50
...	...	......	1	1	25	354	12·47	...	18·80	·68	·09	2·43	34·49	42·44	51
1	...	2	1	4	43	294	4·85	1·36	10·35	2·12	·30	3·26	22·29	20·18	52
1	...	4	3	8	84	405	2·42	·06	16·40	·55	·40	5·22	25·18	23·72	53
...	1	3	......	4	60	267	2·71	·07	11·47	1·47	·31	4·65	20·70	26·94	54
...	1	......	......	1	16	187	4·08	·05	5·02	·22	·05	·88	10·31	30·90	55
2	2	4	1	9	69	360	5·33	·07	14·14	1·33	·06	5·10	20·65	17·63	56
...	...	5	......	5	86	449	3·64	·05	16·58	·11	·23	4·90	25·59	22·20	57

ANNUAL FORM No. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	TOWNS—*concluded.*					
	Chittagong District.					
58	Chittagong	22,130	63	31	324	29
	Noakhalli District.					
59	Sudharam	5,124	2	4	48	6
	Patna District.					
60	Patna	160,237	346	24	2,291	1,242
61	Behar	48,971	191	53	912	8
62	Dinapore	52,225	43	1	398	68
63	Barrh	23,610	2	2	207	25
64	Mokamah	13,722	36	4	185	36
65	Futwa	21,074	46	1	201	30
	Gya District.					
66	Gya	76,121	708	35	1,648	450
67	Daudnagar	9,870	26	.....	187	6
	Shahabad District.					
68	Arrah	43,465	160	1	569	76
69	Doomraon	17,835	116	1	251	29
70	Buxar	17,668	27	......	321	24
	Mozufferpore District.					
71	Mozufferpore	42,742	209	20	369	139
72	Hajeepur	25,695	125	1	255	27
73	Sitamurhi	6,125	5	4	104	11
74	Lalgunge	16,783	66	14	209	17
	Durbhanga District.					
75	Durbhanga	66,096	335	24	765	426
	Sarun District.					
76	Chupra	53,240	53	10	367	276
77	Sewan	13,307	60	2	89	78
78	Revilgunj	12,493	54	......	120	156
	Chumparun District.					
79	Bettiah	21,263	79	66	238	23
	Monghyr District.					
80	Monghyr	57,520	111	16	838	250
81	Jamalpur	13,563	122	124	241	37
82	Shaikhpurah	12,517	20	4	270	8
	Bhagulpore District.					
83	Bhagulpore	57,453	446	113	1,008	368
	Purneah District.					
84	Purneah	15,010	93	......	467	45
	Maldah District.					
85	English Bazar...	12,480	52	2	227	20
	Sonthal Pergunnahs District.					
86	Deoghur	8,005	44	1	97	87
	Cuttack District.					
87	Cuttack	43,239	197	20	211	215
88	Kendrapara	16,697	138	37	110	88
89	Jajipur	11,233	61	8	50	8
	Poori District.					
90	Poori	24,292	324	5	337	256
	Balasore District.					
91	Balasore	20,265	96	59	183	112
	Hazaribagh District.					
92	Hazaribagh	15,306	1	......	243	24
	Lohardugga District.					
93	Ranchi	18,443	......	......	278	27
	Singbhum District.					
94	Chaibassa	6,006	......	73	89	21
	Manbhum District.					
95	Purulia	9,304	70	2	133	46
	TOTAL FOR TOWNS ...	2,460,970	11,830	858	38,798	9,700
	TOTAL FOR THE PROVINCE ...	66,106,026	182,352	13,851	929,948	81,368

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 10th April 1883.

Districts and principal Towns of the Bengal Province during the year 1882—concluded.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION								
Suicide													From all causes		
Male	Female	Wounding or accidents	Snake bite or killed by wild beasts.	Total	All other causes	Total Deaths from all Causes	Cholera	Small pox	Fevers	Bowel complaints	Injury	All other causes	For the year	Mean of previous five years	Number.
.	2	12		14	119	580	2 84	1 40	14 64	1 31	63	5 37	2[illegible] 20	1[illegible] 43	58
		4		4	16	80	33	78	9 36	1 17	78	3 12	15 61	[illegible]0 75	59
2	1	64	40	107	1 563	6 773	2 15	14	14 [illegible]	7 75	60	9 75	34 77	31 17	60
	2	12	9	23	98	1 785	3 91	1 08	18 6[illegible]	16	46	8 12	3[illegible] 36	[illegible]7	61
		4	1	5	96	611	8	01	7 6[illegible]	1 30	03	1 8[illegible]	11 [illegible]	[illegible]	62
		6		6	65	307	08	08	8 70	1 05	25	2 75	1 00	12 29	63
1			1	2	41	312	2 [illegible]	24	13 48	[illegible]	14	7	22 73	32 4[illegible]	64
	1	1	3	5	45	334	2 15	04	9 53	1 70	[illegible]3	2 13	15 81	17 57	65
.		64	7	71	995	3 807	9 30	45	21 64	5 91	93	12 14	51 19	3[illegible] 29	66
	1	1	2	3	44	266	2 63		18 94	[illegible]0	30	1 1[illegible]	[illegible]	30 01	67
	1	15	2	18	280	1 110	3 [illegible]	02	13 00	1 74	41	[illegible]	[illegible]	21 10	68
		3		3	3	40	8 18	05	14 07	1 [illegible]	16	1 [illegible]	20 07	[illegible]	69
	1	2		3	44	413	1 52		18 16	1 [illegible]	16	2 40	2[illegible] 71	20 34	70
1	3	9	9	22	215	974	4 88	46	8 [illegible]	3 25	71	5 0	[illegible]	10 27	71
		4	4	8	83	4[illegible]	4 [illegible]	03	9 92	1 05	31	3 [illegible]	[illegible]	12 [illegible]3	72
			3	3	65	180	81	15	16 97	1 73	48	8 [illegible]	[illegible]	84 01	73
		2	4	6	46	308	3 03	58	12 [illegible]	1 01	35	[illegible] 75	21 [illegible]	13 5[illegible]	74
1	.	16	2	19	131	1 700	5 06	36	11 57	6 44	28	1 08	25 [illegible]	1[illegible] 66	75
	2	11	5	18	278	982	99	18	8 99	5 18	33	4 84	18 14	18 70	76
1		3	4	8	96	333	4 0	15	6 [illegible]8	[illegible] 86	60	[illegible]	25 02	4 [illegible]7	77
	1	3		4	83	428	4 32		10 32	12 48	33	6 64	34 [illegible]	27 02	78
...		2	2	4	61	471	3 71	3 13	11 10	1 08	18	2 66	22 15	22 32	79
1	2	6	7	16	164	1 395	1 92	27	14 76	4 34	27	2 85	24 95	25 12	80
			3	3	104	641	8 9[illegible]	9 14	17 [illegible]8	2 72	23	7 [illegible]	4[illegible]	27 04	81
...		1	1	2	8	318	1 59	31	22 05	69	15	[illegible]3	25 40	32 24	82
2		19	9	30	654	2,619	7 76	1 98	17 54	6 40	52	11 38	45 58	24 70	83
	.	5	1	6	40	631	6 19		31 10	2 99	39	2 66	43 35	36 02	84
		1	1	2	35	348	4 18	10	18 26	1 60	10	2 81	27 19	36 66	85
					37	216	5 49	12	12 11	4 63		4 62	26 99	16 17	86
4	4	13	5	26	197	866	4 55	46	4 57	4 07	60	4 55	20 02	22 33	87
1	2	2	3	8	156	537	3 79	2 35	7 00	5 [illegible]0	70	9 [illegible]	34 21	27 73	88
1	...	5	3	9	140	285	5 43	71	4 15	71	90	13 26	25 37	31 29	89
..	1	10	3	13	456	1,391	13 33	20	13 87	10 53	53	18 77	57 26	62 04	90
.	1	8	1	10	150	610	4 73	3 91	9 03	5 52	40	7 40	30 10	26 96	91
	..	2	.. .	2	31	301	06		15 97	1 56	·13	2 02	19 66	21 24	92
	..	5	. . .	5	31	341			15 07	1 46	27	1 08	18 48	21 47	93
	3	1	.	3	16	212		12 15	16 48	3 49	·49	2 66	35 29	37 11	94
	1	8		9	45	305	7 52	21	14 29	4 94	96	4 89	32 78	38 93	95
63	71	580	237	951	14,475	76,601	4 79	34	15 72	3 93	38	5 86	31 05	30 63	
944	1,470	8,787	9,410	21,611	140,732	1,349,651	2 75	20	14 06	92	32	2 13	20 41	19 94	

F. W. A. DE FABECK,

Offg. Sanitary Commissioner for Bengal.

ANNUAL FORM NO. VII.—*Deaths registered from* **CHOLERA** *in the*

1	2	3		4							
		CIRCLES OF REGISTRATION		VILLAGES							
Number	DISTRICTS	Number in each district	Number from which deaths from cholera were reported	Number in each district	Number from which deaths from cholera were reported	January	February	March	April	May	June
	Burdwan Division										
1	Burdwan	20	20	3 806	625	735	830	1,372	679	497	364
2	Bankura	13	13	5 [illegible]3	[illegible]	240	246	107	150	378	227
3	Birbhum	8	8	3 [illegible]88	316	111	270	[illegible]80	303	195	290
4	Midnapur	29	21	14[illegible]7 3	[illegible]	342	402	440	286	327	250
5	Hughli	12	12	1 [illegible] 1	188	65	34	55	35	48	58
6	Serampore	8	5	910	10[illegible]	51	73	55	39	[illegible]0	46
7	Howrah	7	7	1,488	2[illegible]8	2[illegible]3	148	137	111	148	94
	Presidency Division										
8	24-Pergunnahs exclusive of Suburbs of Calcutta	31	31			56[illegible]	312	375	276	267	101
	Suburbs of Calcutta	1	1			1 2	153	276	214	318	198
	Total	32	32	[illegible] 170	1 032	721	46[illegible]	601	520	[illegible]15	290
9	Nuddea	8	[illegible]	4 055	1 [illegible]5	710	831	2 257	2 411	1 [illegible]09	382
10	Jessore	17	17	792	1,[illegible]57	1 494	784	1 073	781	4 5	109
11	Moorshedabad	7	7	[illegible] 1	[illegible]	1 1	[illegible]7	72[illegible]	1 08[illegible]	378	137
12	Khoolnah	14	14	2 [illegible]50	[illegible]30	[illegible]32	1[illegible]1	174	[illegible]52	380	194
	Rajshahye and Cooch Behar Division										
13	Dinagepore	18	15	7 108	58	[illegible]	6	2	41	36	[illegible]
14	Rajshahye	14	14	[illegible]	471	77	[illegible]	1 2	58[illegible]	418	210
15	Rungpore	17	16	4 [illegible]16	[illegible]04	2[illegible]3	1[illegible]2	113	[illegible]	[illegible]8	240
16	Bogra	[illegible]	8	4 1[illegible]	[illegible]	44			3	[illegible]0	[illegible]
17	Pubna	10	10	3 2[illegible]	[illegible]73	41	8	78	670	409	112
18	Darjeeling	5	1	*	*			13	3	30	
19	Julpigoree	7	0	441	7			1	4	4	1
	Dacca Division										
20	Dacca	15	15	5 7[illegible]4	1 100	[illegible]72	182	267	414	125	56
21	Furreedpore	14	14	[illegible]	[illegible]72	2[illegible]2	74	391	679	456	75
22	Backergunge	17	17	[illegible] 2[illegible]5	1 390	305	247	1 174	2 077	2 577	769
23	Mymensing	18	18	7 [illegible]7	805	[illegible]4	197	182	247	254	85
24	Tipperah	13	13	6,[illegible]	6[illegible]8	694	340	311	227*	90	102
	Chittagong Division										
25	Chittagong	14	12	1 169	292	57	41	121	375	1,272	613
26	Noakhally	10	[illegible]	2 406	114	24	11	7	20	13	37*
	Patna Division										
27	Patna	19	1[illegible]	5 983	1 010	14	7	3	142	570	1 574
28	Gya	14	14	6 [illegible]19	475	13	15	5	24	110	648
29	Shahabad	14	14	[illegible] 7	430	25	27		5	[illegible]6	46[illegible]
30	Mozufferpore	13	13	5 [illegible]88	1 127	1	8	2	168	2 505	4 384
31	Durbhunga	11	11	[illegible]	1 [illegible]		47	176	1 043	3,883	3,754
32	Sarun	13	13	4 377	44	2	16		12	276	317
33	Champarun	10	10	2 2[illegible]	491		1		3	234	606
	Bhagulpore Division										
34	Monghyr	14	14	[illegible]4[illegible]7	681	3	5	101	[illegible]2	1 560	2,073
35	Bhagulpore	13	13	3 360	[illegible]	6	65	748	2 [illegible]8	1 594	907
36	Purneah	14	14	[illegible] 645	710		511	2,627	1 914	7 7	60
37	Maldah	10	10	2 031	37			65	216	105	28
38	Sonthal Pergunnahs	6	6	9,5[illegible]0	342	11	55	125	11[illegible]	384	476
	Orissa Division										
39	Cuttack	12	12	7 843	1 721	1[illegible]4	214	400	1 348	1 637	772
40	Pooree	6	6	3 173	689	64	78	270	7[illegible]3	962	759
41	Balasore	10	10	6 509	1 594	344	235	75 5	1,227	1,256	836
	Chota Nagpore Division										
42	Hazaribagh	17	14	7 9 1	31	1		1	11	10	17
43	Lohardugga	22	5	6 6 [illegible]	12		1			21	17
44	Singbhum	6	5	3 050	22			7	20	5	8
45	Manbhum	17	16	[illegible] 137	231	10	109	72	159	401	176
	TOTAL FOR THE PROVINCE	644	600	201 989	27,314	8 947	7,589	15,893	25,587	27,546	[illegible]

* There are no regular

OFFICE OF THE SANY. COMMR. FOR BENGAL, }
The 10*th April* 1883. }

Districts of the Bengal Province during each month of the year 1882.

5						6			7			8	9
						TOTAL.			RATIO OF DEATHS PER 1,000 OF POPULATION.			Mean ratio per 1,000 during previous five years.	Number.
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.		
340	100	30	39	100	196	2,775	2,501	5,276	4·15	3·45	3·79	1·14	1
215	119	27	11	15	120	976	978	1,954	1·92	1·82	1·87	·50	2
421	855	52	30	30	47	1,396	1,197	2,593	3·65	2·89	3·26	·93	3
309	142	24	68	193	587	1,835	1,625	3,460	1·47	1·27	1·37	1·07	4
32	38	16	15	52	208	349	295	644	1·10	·85	·97	·67	5
46	34	49	59	89	228	515	314	829	2·95	1·76	2·35	1·18	6
36	24	30	50	86	325	868	539	1,407	2·74	1·69	2·21	2·33	7
67	72	84	85	292	1,652	2,310	1,842	4,152	2·78	2·33	2·56	1·65	8
67	49	74	177	224	558	1,648	822	2,470	11·19	7·88	9·82	7·27	8
134	121	158	262	516	2,210	3,958	2,664	6,022	4·05	2·97	3·54	2·41	
58	83	45	272	1,072	1,420	5,780	5,240	11,020	5·86	5·07	5·46	2·35	9
118	72	86	875	1,970	1,690	5,047	4,510	9,557	6·47	5·65	6·05	8·58	10
15	31	24	50	31	102	1,907	1,676	3,583	3·25	2·61	2·92	1·50	11
29	56	80	231	439	926	1,732	1,567	3,299	3·04	3·06	3·05	1·65	12
26	14	......	2	......	82	116	98	214	·14	·13	·14	·74	13
60	2	1	114	552	612	1,487	1,302	2,789	2·25	1·91	2·08	1·14	14
63	65	28	27	30	243	953	817	1,770	·89	·70	·84	1·02	15
75	49	158	424	397	225	709	752	1,461	1·90	2·07	1·98	1·05	16
23	16	159	1,362	1,050	692	2,673	2,450	5,123	4·12	3·69	3·90	1·31	17
......	......	......	......	......	......	28	27	55	·31	·40	·35	·39	18
......	......	......	......	7	10	13	20	33	·03	·07	·05	·45	19
44	403	431	390	1,119	2,231	3,335	2,999	6,334	3·22	2·77	2·99	1·88	20
33	221	171	591	1,196	919	2,636	2,402	5,038	3·27	2·90	3·08	1·72	21
238	89	28	81	248	737	4,830	3,740	8,570	4·96	4·03	4·50	3·01	22
40	39	80	438	1,453	2,609	3,314	2,684	5,998	2·13	1·79	1·96	·95	23
54	43	34	91	163	520	1,449	1,217	2,665	1·87	1·62	1·75	1·11	24
147	78	33	4	1	2	1,427	1,317	2,744	2·68	2·10	2·42	2·28	25
4	50	47	1	3	42	152	116	268	·36	·28	·32	5·55	26
2,186	494	87	36	7	8	2,772	2,306	5,078	3·22	2·56	2·89	1.15	27
2,493	1,130	177	255	62	63	2,578	2,417	4,995	2·47	2·23	2·35	1·37	28
1,716	1,010	189	16	2	25	2,010	1,637	3,647	2·11	1·61	1·85	·96	29
2,318	1,714	717	183	108	1	6,652	5,457	12,109	5·25	4·14	4·68	1·74	30
1,086	567	122	122	90	26	5,758	5,158	10,916	4·44	3·85	4·14	·75	31
790	1,537	439	80	35	......	1,904	1,630	3,534	1·75	1·36	1·54	·76	32
1,196	2,276	940	99	7	......	3,029	2,333	5,362	3·47	2·74	3·11	2·12	33
672	205	46	11	13	......	3,003	2,348	5,351	3·09	2·34	2·71	1·33	34
753	484	116	23	73	95	4,041	3,678	7,719	4·12	3·72	3·92	1·56	35
......	......	......	......	1	......	4,632	4,238	8,870	4·94	4·64	4·79	1·42	36
9	8	6	126	155	375	575	513	1,088	1·65	1·41	1·53	2·15	37
340	179	49	9	20	12	965	814	1,779	1·22	1·03	1·13	·59	38
769	460	374	258	231	540	3,690	3,606	7,296	4·34	4·05	4·19	2·57	39
379	170	61	38	47	203	2,028	1,755	3,783	4·54	3·97	4·25	4·42	40
595	134	17	6	90	384	3,146	2,731	5,877	6·81	6·64	6·21	3·46	41
58	32	16	3	4	......	71	82	153	·13	·14	·13	·76	*42
49	18	3	......	......	......	60	49	109	·07	·06	·06	·78	43
25	5	......	......	......	......	40	25	65	·14	·08	·11	·68	44
155	169	8	4	......	4	736	579	1,315	1·40	1·08	1·24	·76	45
13,185	12,917	5,044	6,750	12,357	18,716	97,949	84,403	1,82,352	3·98	2·53	2·75	1·52	

villages in Dárjiling.

F. W. A. DE FABECK,

Offg. Sanitary Commissioner for Bengal.

ANNUAL FORM No. VIII.—*Deaths registered from* SMALL-POX *in the*

1	2	3		4		5				
		Circles of Registration.		Villages.						
Number.	Districts.	Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan	20	3	3,806	2	......	3	......	......	......
2	Bankura	13	12	5,563	85	3	6	8	7	10
3	Birbhum	8	2	3,088	2	13	......	......	......	......
4	Midnapur	20	21	14,753	257	81	71	73	92	99
5	Hughli	12	3	1,951	4	......	......	......	......	1
6	Serampore	8	3	910	5	1	......	......	......	......
7	Howrah	7	3	1,488	4	1	1	......	2	......
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	12	......	......	2	1	4	2	9
	Suburbs of Calcutta ...	1	1	......	......	......	3	7	6	4
	Total ...	32	13	5,179	22	2	4	11	8	13
9	Nuddea	35	5	4,035	11	1	3	7	1	3
10	Jessore	17	4	3,792	4	......	3	1	......	......
11	Murshidabad	27	10	3,911	39	10	4	5	16	31
12	Khoolnah	14	2	2,950	2	2	......	......	......	......
	Rajshahye and Cooch Behar Division.									
13	Dinagepore	18	5	7,108	6	......	......	2	5	3
14	Rajshahye	14	1	4,912	4	1	......	......	......	......
15	Rungpore	17	3	4,206	3	1	1	......	......	......
16	Bogra	9	1	4,176	2	......	......	......	......	......
17	Pubna	10	3	3,236	2	......	......	......	1	1
18	Darjiling	5	2	*	*	2	1	......	1	......
19	Julpaiguri	7	1	441	5	1	1	1	3	1
	Dacca Division.									
20	Dacca	15	7	5,724	31	10	5	19	34	15
21	Faridpore	14	6	3,365	70	77	66	73	46	35
22	Buckergunge	17	16	3,295	209	94	75	107	82	63
23	Mymensing	18	15	7,597	100	46	53	41	110	80
24	Tipperah	13	13	6,305	209	26	40	121	115	95
	Chittagong Division.									
25	Chittagong	14	13	1,169	270	275	341	403	107	44
26	Noakhalli	10	10	2,496	210	46	68	182	160	90
	Patna Division.									
27	Patna	19	18	5,983	172	7	20	35	57	50
28	Gya	14	12	6,219	68	......	7	14	18	20
29	Shahabad	14	8	4,827	61	2	3	......	1	3
30	Mozufferpore	13	13	5,788	339	9	67	122	106	115
31	Durbhanga	11	11	2,932	645	20	104	135	128	171
32	Sarun	13	12	4,377	102	2	......	6	18	83
33	Chumparun	10	10	2,299	214	18	86	29	108	140
	Bhagulpore Division.									
34	Monghyr	14	13	3,457	177	16	47	88	92	165
35	Bhagulpore	13	12	3,369	429	52	67	125	154	172
36	Purneah	14	5	3,645	15	10	9	3	1	2
37	Maldah	10	9	2,651	52	14	11	12	9	7
38	Sonthal Pergunnahs	6	5	9,536	27	1	5	12	8	3
	Orissa Division.									
39	Cuttack	12	12	7,883	945	15[illegible]	383	530	294	149
40	Poori	6	6	3,175	413	98	77	163	132	97
41	Balasore	10	10	6,599	440	139	257	161	82	72
	Chota Nagpore Division.									
42	Hazaribagh	17	9	7,951	30	......	1	4	16	20
43	Lohardugga	22	11	6,625	199	88	43	57	75	40
44	Singbhum	6	4	3,080	21	65	11	......	1	5
45	Manbhum	17	8	6,137	35	6	17	21	15	21
	Total for the Province ...	644	365	201,089	5,801	1,370	1,911	2,571	2,100	[illegible]

* There are no regular villages in

Office of the Sany. Commr. for Bengal,
The 10*th April* 1883.

Districts of the Bengal Province during each month of the year 1882.

5							6			7		8			9	10
							TOTAL.			NUMBER OF THESE DEATHS AMONG CHILDREN.		TOTAL RATIO PER 1,000 OF POPULATION.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Under one year.	Under 12 years.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
......	......	......	......	......	5	5	7	6	13	2	6	·01	·008	·009	·14	1
21	6	......	2	......	......	......	31	32	63	8	21	·06	·05	·04	·13	2
......	......	......	......	......	......	......	6	7	13	...	1	·01	·01	·01	·02	3
97	60	43	23	17	14	10	361	325	686	82	206	·29	·25	·27	·55	4
......	1	4	......	......	......	......	4	2	6	...	......	·01	·005	·000	·08	5
1	1	......	......	......	......	......	1	2	3	......	....	·005	·01	·008	·10	6
3	1	......	......	......	......	......	6	2	8	4	......	·01	·006	·01	·22	7
6	2	1	......	1	1	3	15	17	32	4	6	·01	·02	·01	·08	8
2	2	......	......	......	1	......	14	11	25	4	6	·09	·10	·09	1·21	
8	4	1	......	1	2	3	29	28	57	8	11	·02	·03	·03	·23	
......	......	......	......	......	1	......	8	8	16	1	12	·008	·007	·007	·13	9
......	1	1	......	......	......	......	3	3	6	1	2	·003	·003	·003	·07	10
16	8	2	......	......	2	......	44	50	94	12	45	·07	·07	·07	·05	11
3	......	......	......	......	......	......	1	4	5	......	3	·001	·007	·004	·04	12
3	1	1	......	......	......	......	8	7	15	1	5	·01	·009	·009	·04	13
......	......	......	......	......	......	......	...	1	1	......	......	......	·001	·0007	·02	14
......	2	......	......	......	......	......	1	3	4	......	1	·0009	·002	·001	·34	15
1	......	......	......	......	......	......	1	...	1	......	1	·002	......	·001	·004	16
......	......	2	......	......	......	......	4	...	4	...	......	·006	......	·003	·03	17
1	......	......	......	......	......	......	3	2	5	......	2	·03	·02	·01	·11	18
......	......	......	......	......	......	......	3	4	7	......	......	·009	·01	·01	·22	19
20	4	13	6	6	6	17	92	63	155	16	55	·08	·05	·07	·06	20
29	18	14	9	3	9	3	225	157	382	52	129	·27	·19	·23	·13	21
62	31	34	14	8	17	18	324	281	605	108	189	·33	·30	·31	·18	22
83	73	41	16	17	20	52	353	288	641	124	242	·22	·19	·21	·17	23
79	44	25	15	8	11	7	321	265	586	90	222	·41	·35	·38	·10	24
18	15	1	......	3	......	1	642	566	1,208	424	585	1·20	·94	1·06	·23	25
37	23	14	9	12	5	10	359	297	656	80	249	·86	·73	·79	·69	26
50	15	7	3	2	......	......	130	116	246	72	170	·15	·12	·14	·54	27
16	16	2	25	12	14	25	96	73	169	44	124	·09	·06	·07	·37	28
2	1	5	2	......	......	1	6	14	20	2	12	·006	·01	·01	·35	29
69	30	18	21	9	1	3	207	208	560	144	305	·21	·22	·21	·13	30
70	16	4	5	1	1	2	350	307	657	202	348	·27	·22	·25	·16	31
25	85	11	12	1	......	6	78	86	164	79	58	·07	·07	·07	·11	32
183	80	31	8	9	1	......	379	268	647	168	360	·43	·31	·37	·29	33
135	47	5	......	2	1	9	309	298	607	138	360	·31	·29	·30	·45	34
190	83	29	12	14	21	19	422	446	868	289	464	·43	·45	·44	·35	35
......	......	......	......	......	1	2	17	11	28	3	14	·01	·01	·01	·10	36
9	11	4	......	......	1	1	48	31	79	21	40	·13	·08	·11	·12	37
10	2	......	3	8	......	7	30	24	54	8	21	·03	·03	·03	·11	38
82	83	30	16	17	19	53	895	885	1,780	384	803	1·05	·99	1·03	1·44	39
65	50	42	43	28	49	68	467	445	912	198	486	1·04	1·00	1·02	2·23	40
25	13	4	12	4	6	24	362	437	799	160	341	·78	·90	·84	·50	41
44	8	10	4	5	2	2	63	51	114	20	74	·11	·09	·10	·10	42
72	42	22	3	2	......	......	231	213	444	29	......	·28	·26	·27	·50	43
6	18	22	15	9	12	31	96	70	166	20	59	·34	·24	·29	·02	44
6	5	6	5	2	......	3	59	38	97	5	34	·11	·07	·09	·03	45
1,461	819	446	279	195	221	388	7,142	6,509	13,651	2,999	6,130	·21	·19	·20	·27	

Darjiling:

F. W A. DE FABECK,

Offg. Sanitary Commissioner for Bengal.

Annual Form No. IX.—*Deaths registered from* FEVERS *in*

Number. (1)	Districts. (2)	Circles of Registration. (3) Number in each district.	No. from which deaths from fever were reported.	Villages. (4) Number in each district.	No. from which deaths from fever were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan	20	20	3,806	3,301	3,884	3,184	3,267	2,881	2,350
2	Bankura	13	13	5,503	2,665	2,535	2,097	2,139	2,040	1,401
3	Birbhum	8	8	3,088	2,513	2,310	1,583	1,719	1,838	1,286
4	Midnapur	29	29	14,753	9,634	4,138	3,324	3,279	2,737	2,391
5	Hughli	12	12	1,951	1,677	1,310	1,040	1,150	970	859
6	Serampore	8	8	910	593	350	462	420	327	339
7	Howrah	7	7	1,488	924	472	372	377	340	336
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	31	31	......	......	2,408	1,750	1,942	1,729	1,591
	Suburbs of Calcutta	1	1	......	......	441	[illegible]	353	316	313
	Total	32	32	5,179	4,042	2,030	2,084	2295	2,045	1,904
9	Nuddea	35	35	4,035	3,354	3,629	4,911	4,822	3,950	3,202
10	Jessore	17	17	3,702	2,758	3,324	2,578	2,407	1,994	1,862
11	Murshidabad	27	27	3,911	3,306	2,785	2,219	2,454	2,991	1,977
12	Khoolnah	14	14	2,930	2,407	1,791	1,364	1,397	1,409	1,351
	Rajshahye and Cooch Behar Division.									
13	Dinagepore	18	18	7,108	4,8[illegible]4	2,188	1,779	1,847	1,855	1,865
14	Rajshahye	14	14	4,912	4,608	3,213	2,228	2,331	2,869	2,300
15	Rungpore	17	17	4,206	3,032	3,508	2,450	2,486	2,036	1,689
16	Bogra	9	9	4,176	2,805	1,319	1,014	1,129	1,02*	995
17	Pubna	10	10	3,236	2,376	1,562	1,370	1,561	1,983	1,928
18	Darjiling	5	5	*	*	61	45	43	55	87
19	Julpaiguri	7	7	441	417	805	606	742	705	707
	Dacca Division.									
20	Dacca	15	15	5,724	3,885	2,705	1,809	1,973	1,905	1,656
21	Faridpore	14	14	3,365	2,495	1,744	1,186	1,176	1,002	900
22	Backergunge	17	17	3,295	2,515	3,303	2,263	2,468	2,125	2,435
23	Mymensing	18	18	7,597	2,509	1,397	1,249	1,104	1,235	1,251
24	Tipperah	13	13	6,305	3,675	1,636	1,230	1,287	1,001	1,263
	Chittagong Division.									
25	Chittagong	14	14	1,169	851	1,236	1,180	1,149	927	1,250
26	Noakhalli	10	10	2,490	1,733	1,101	963	1,285	1,022	998
	Patna Division.									
27	Patna	10	10	5,983	3,615	2,300	1,484	1,409	1,977	2,527
28	Gya	14	14	6,219	5,151	2,319	1,662	1,876	1,625	1,924
29	Shahabad	14	14	4,827	4,387	1,818	1,271	1,267	1,208	1,472
30	Mozufferpore	13	13	5,788	3,030	1,804	1,555	1,658	1,648	2,600
31	Durbhanga	11	11	2,932	2,019	2,111	1,851	1,959	1,807	3,010
32	Sarun	13	13	4,377	1,968	985	646	747	609	924
33	Chumparun	10	10	2,299	2,040	687	505	474	554	659
	Bhagulpore Division.									
34	Monghyr	14	14	3,457	2,298	1,828	1,417	1,610	1,496	2,145
35	Bhagulpore	13	13	3,369	2,507	1,742	1,676	2,273	2,121	3,558
36	Purneah	14	14	3,645	3,372	2,856	2,659	3,332	2,699	2,425
37	Maldah	10	10	2,651	2,263	1,184	901	1,058	1,154	945
38	Sonthal Pergunnahs	6	6	9,536	5,371	1,114	1,016	1,033	1,123	1,121
	Orissa Division.									
39	Cuttack	12	12	7,883	4,490	1,241	1,106	1,160	1,021	918
40	Poori	6	6	3,175	1,648	538	418	855	470	881
41	Balasore	10	10	6,599	2,748	840	550	632	435	513
	Chota Nagpore Division.									
42	Hazaribagh	17	17	7,951	4,037	970	805	1,111	1,054	1,317
43	Lohardugga	22	22	6,025	5,187	1,003	1,541	1,808	1,561	1,698
44	Singhbhum	6	6	3,080	2,100	470	483	697	528	514
45	Manbhum	17	17	6,187	3,272	658	754	850	1,201	1,281
	Total for the Province	644	644	201,989	134,812	87,310	67,910	71,519	67,868	67,817

* There are no regular

(O)ffice of the Sany. Commr. for Bengal,
The 10*th April* 1883.

the Districts of the Bengal Province during each month of the year 1882

June	July	August	September	October	November	December	6 Total: Male	6 Total: Female	6 Total: Total	7 Ratio of Deaths per 1,000 of Population: Male	7 Ratio: Female	7 Ratio: Total	8 Mean ratio per 1,000 of previous five years	Number
2 161	2,731	3 198	3 490	4,040	4 436	4 [illegible]	20 872	19 301	40 173	31 93	[illegible]	[illegible]	20 80	1
1 328	1 702	2 412	2 415	3 074	3 [illegible]	3 072	14 071	13 437	27 [illegible]08	[illegible]	[illegible]	[illegible]	[illegible]	2
977	1 255	1 824	2 137	2 [illegible]8	2 462	[illegible]	11 987	10 [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17 79	3
2,453	2 [illegible]	2 980	2 [illegible]85	3 [illegible]	4 418	[illegible]	21 [illegible]	18 404	[illegible]	1 [illegible]	14 49	[illegible]	[illegible]	4
714	804	898	1 010	1 [illegible]	1 [illegible]	1 526	6 [illegible]47	6 900	[illegible]	[illegible]	18 4[illegible]	[illegible]	11 93	5
214	243	91	[illegible]	[illegible]	478	[illegible]	[illegible]	1 [illegible]	[illegible]	13	1 [illegible]5	[illegible]	13 [illegible]0	6
200	[illegible]82	3[illegible]5	384	443	618	[illegible]	2 [illegible]	2 000	4 [illegible]	5 42	[illegible]7	7 2[illegible]	10 17	7
1 291	1 77[illegible]	2 1[illegible]9	2 091	2 107	[illegible]482	3 [illegible]01	13 920	11 00[illegible]	24 9[illegible]	1 [illegible]	13 [illegible]	[illegible]	16 [illegible]	8
265	274	[illegible]7	348	378	417	[illegible]07	2 [illegible]6	1 [illegible]67	1 [illegible]	[illegible]	[illegible]	[illegible]	24 64	
1 556	2 0[illegible]	[illegible]	2 444	2 [illegible]	2 [illegible]	4 008	16 2[illegible]6	12 [illegible]	2[illegible]	[illegible]	14 [illegible]	15 [illegible]	17 [illegible]7	
2 405	2 [illegible]	3 [illegible]38	[illegible]	6 290	8 155	8 0[illegible]	32 [illegible]	28 319	60 [illegible]	[illegible]	[illegible]	30 1[illegible]	21 [illegible]	9
1 671	1 837	1 930	2 349	3 [illegible]87	[illegible]	5 [illegible]70	18 [illegible]20	1[illegible] 4[illegible]0	[illegible]	[illegible]	19 [illegible]	[illegible]	[illegible]	10
1 533	1 889	2 [illegible]	2 748	3 [illegible]	4 [illegible]	[illegible]	17 [illegible]	14 [illegible]	31 [illegible]	[illegible]	[illegible]	[illegible]	2[illegible] 58	11
1,148	1,339	1,450	1 [illegible]83	1 760	2 [illegible]	[illegible]31	1[illegible] 510	9 598	2[illegible] 144	[illegible]	[illegible]	15 65	15 [illegible]5	12
1 566	1 [illegible]85	1 5[illegible]9	2 021	2 [illegible]40	2 333	2 7[illegible]1	13 5[illegible]9	10 140	23 618	17	13 9[illegible]	15 [illegible]	1[illegible] 80	13
1 7[illegible]9	1 899	19[illegible]8	2 343	3 101	4,0[illegible]	4 4[illegible]5	18 043	14 407	3[illegible] 451	[illegible]	[illegible]	24 [illegible]	[illegible]	14
1,522	1,289	1 310	1 [illegible]11	1 492	[illegible]0 0	2 001	13 [illegible]	10 [illegible]	[illegible]41	12 [illegible]	10 3	11 [illegible]	11 [illegible]	15
934	1 070	1,[illegible]58	1 143	1 403	1 5[illegible]	1 [illegible]	7 9[illegible]0	6 [illegible]7	14 [illegible]	[illegible]	15 1[illegible]	[illegible]	14 94	16
1 453	1 331	1 344	1 519	2 348	3 [illegible]1	3 [illegible]76	12 415	10 660	2[illegible]	1[illegible] 1	1[illegible]	1[illegible]7	9 [illegible]	17
[illegible]8	77	[illegible]	[illegible]	70	7[illegible]	71	502	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]1	4 02	18
621	690	534	[illegible]77	567	7[illegible]	802	4 [illegible]	3 [illegible]	8 138	1[illegible] 01	12 [illegible]	13 [illegible]	10 78	19
1 419	1 983	1,[illegible]	1 791	2 [illegible]8	3 [illegible]30	4 410	14 519	12 [illegible]	27 1[illegible]0	14 03	11 [illegible]7	12 9[illegible]	9 [illegible]	20
770	714	783	[illegible]	1 158	1 717	1 [illegible]85	8 037	5 [illegible]61	13 [illegible]	[illegible]	7 [illegible]	[illegible]	8 [illegible]	21
1 905	2 [illegible]64	2 023	2 [illegible]3	2 [illegible]	3 881	4 201	17 344	14 [illegible]	31 [illegible]	17 81	[illegible]	1[illegible]	7 [illegible]	[illegible]
1 160	1 051	[illegible]84	1 [illegible]3	1 03[illegible]	1 88[illegible]	[illegible]188	9 744	6 770	16 14	[illegible]	[illegible]1	[illegible]11	[illegible]	23
1,164	1,172	1 138	994	1,116	1 4[illegible]1	1 373	8 420	6,[illegible]75	14 [illegible]	10 [illegible]	8 78	[illegible]	7 13	24
1 211	1 110	970	1 097	1 074	1 107	1 [illegible]69	7 [illegible]	[illegible]22	1[illegible]48	13 [illegible]	10 35	1[illegible] 05	10 [illegible]8	5
967	801	834	923	809	904	1 048	[illegible]57	5 [illegible]	11 [illegible]	1[illegible] 14	13 40	14 28	12 4[illegible]	26
2 795	4 872	3 298	2 786	3 358	2 554	2 337	16 684	14 [illegible]7	31 131	19 40	1[illegible] 10	17 71	13 70	27
2 422	3 603	3 510	3 177	3 504	2 712	2 [illegible]5	1[illegible] 727	14 [illegible]3	31 180	16 09	1[illegible] 36	1[illegible]7	10 [illegible]0	28
1 750	2 483	2 757	2 773	2 017	2 194	2 [illegible]83	13 [illegible]41	10 [illegible]	24 21[illegible]	14 [illegible]	10 41	12 [illegible]	9 [illegible]	29
2 594	2 307	2 188	2,343	2,447	2 347	2 110	14 772	10 [illegible]	[illegible]01	11 7	8 [illegible]	[illegible]41	6 31	30
2,774	2 [illegible]6	1 930	2 050	2 100	2 047	2 093	14 921	11 [illegible]	[illegible]6 16[illegible]	11 [illegible]1	8 40	9 [illegible]	6 [illegible]1	31
900	1,156	1,411	1,254	1,094	1 033	973	7 13[illegible]	4 [illegible]	11 [illegible]2	6 [illegible]	[illegible]	5 18	[illegible]7	32
739	872	856	1 061	1,711	1 750	2 272	7,1[illegible]0	4 [illegible]3	12 03[illegible]	8 17	5 84	7 03	5 46	33
2,200	1 949	1,578	1,461	1 683	1 571	1 712	11 857	8 8[illegible]9	20 730	12 23	8 86	10 52	11 1[illegible]	34
2,158	2,238	1 853	1,[illegible]67	2,161	2 618	2 696	14 488	11 [illegible]	25 9[illegible]	14 [illegible]	11 61	13 [illegible]	10 [illegible]	35
1,517	1,456	1 441	1,957	2 627	3 683	3 974	16 7[illegible]8	13 [illegible]7	30 225	17 85	1[illegible]0	16 [illegible]4	16 [illegible]7	36
609	648	761	847	1 381	1 698	1 713	7 270	5 679	1[illegible] 949	20 96	1[illegible] 0	18 23	18 35	37
1,129	1,[illegible]53	1,447	1 324	1,038	1 105	1,171	7,747	6 2[illegible]7	13 974	9 86	7 [illegible]	8 91	7 64	38
811	774	860	892	909	1,080	1 [illegible]15	6 486	5 99[illegible]	12 4[illegible]1	7 63	6 73	7 17	9 04	39
298	318	332	369	305	472	626	2 514	2 [illegible]8	5 082	5 62	5 81	[illegible] 71	5 6[illegible]	40
447	541	610	[illegible]81	645	810	9[illegible]3	3,826	3 [illegible]51	7 477	8 29	7 54	7 [illegible]0	[illegible]6[illegible]	41
1,264	1,546	1,600	1,347	1,225	1,003	873	7 602	6 5[illegible]3	14 175	13 95	11 74	12 83	9 18	42
1,730	2,001	2,104	2,225	2,164	1,880	1 570	11 [illegible]14	10 108	21 8[illegible]0	14 70	1[illegible] 43	13 55	11 [illegible]	43
464	467	528	467	493	461	516	3 282	2 830	6 11[illegible]	11 [illegible]	10 07	1[illegible] 87	8 3[illegible]	44
1,174	1,391	1,289	1,083	895	789	726	6 484	5 617	1[illegible] 051	12 [illegible]	10 52	11 38	6 [illegible]0	45
65,940	67,390	69,935	74,427	[illegible]86,847	101,207	108 073	508,16[illegible]	421,77[illegible]	929 943	15 49	1[illegible] 06	1[illegible] 40[illegible]	11 21	

villages in Darjiling.

F. W. A. deFABECK,

Offg Sanitary Commissioner for Bengal

ANNUAL FORM No. X.—*Deaths registered from* **BOWEL-COMPLAINTS**

1	2	3		4							
		CIRCLES OF REGISTRATION.		VILLAGES.							
Number.	DISTRICTS.	Number in each district.	Number from which deaths from bowel-complaints were reported.	Number in each district.	Number from which deaths from bowel-complaints were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan ...	26	29	3,806	380	76	69	61	51	71	88
2	Bankura ...	13	13	5,563	300	53	65	71	53	83	95
3	Birbhum ...	8	7	3,088	85	9	8	25	10	9	32
4	Midnapur ...	29	29	14,753	2,138	429	355	321	257	266	310
5	Hughli ...	12	12	1,051	567	182	122	126	83	89	96
6	Serampore ...	8	8	910	237	85	68	63	63	41	35
7	Howrah ...	7	7	1,488	543	245	194	176	113	127	91
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	......	......	175	113	117	118	104	66
	Suburbs of Calcutta ...	1	1	......	......	203	143	105	100	79	79
	Total ...	32	32	5,179	685	378	256	222	218	183	145
9	Nuddea ...	35	34	4,035	575	131	120	114	136	100	80
10	Jessore ...	17	15	3,792	192	24	26	37	31	25	23
11	Murshidabad ...	27	24	3,911	205	31	23	55	45	34	23
12	Khoolnah ...	14	13	2,950	161	30	19	15	16	18	15
	Rajshahye and Cooch Behar Division.										
13	Dinagepore ...	18	18	7,108	320	24	23	27	22	38	16
14	Rajshahye ...	14	13	4,912	50	16	3	6	6	5	4
15	Rungpore ...	17	14	4,206	185	24	11	30	32	16	18
16	Bogra ...	9	7	4,176	37	4	1	4	3	9	13
17	Pubna ...	10	10	3,236	173	24	28	18	40	31	31
18	Darjiling ...	5	5	*	*	12	3	3	13	20	26
19	Julpaiguri ...	7	6	441	27	2	6	11	10	8	5
	Dacca Division.										
20	Dacca ...	15	15	5,724	722	248	146	167	164	157	118
21	Faridpore ...	14	14	3,365	230	62	39	42	53	36	33
22	Backergunge ...	17	17	3,295	361	66	43	65	43	76	53
23	Mymensing ...	18	18	7,597	204	78	54	59	54	69	37
24	Tipperah ...	13	12	6,305	182	58	68	25	15	10	25
	Chittagong Division.										
25	Chittagong ...	4	14	1,169	286	40	53	82	58	80	47
26	Noakhalli ...	10	10	2,406	140	15	17	17	26	32	13
	Patna Division.										
27	Patna ...	19	10	5,983	1,189	281	253	256	371	401	425
28	Gya ...	14	14	6,219	237	72	71	57	35	56	67
29	Shahabad ...	14	14	4,827	650	162	94	60	76	64	69
30	Mozufferpore ...	13	13	5,788	1,023	192	198	240	222	399	356
31	Durbhanga ...	11	11	2,932	575	244	223	271	361	421	398
32	Sarun ...	13	13	4,377	1,541	424	270	338	292	348	357
33	Chumparun ...	10	9	2,299	204	11	25	14	14	30	38
	Bhagulpore Division.										
34	Monghyr ...	14	14	3,457	209	37	19	21	62	58	77
35	Bhagulpore ...	13	12	3,369	344	73	58	75	96	90	71
36	Purneah ...	14	13	3,645	124	6	30	14	10	3	13
37	Maldah ...	10	8	2,651	246	2	.....	10	8	4	2
38	Sonthal Pergunnahs ...	6	6	9,536	185	15	28	30	44	40	28
	Orissa Division.										
39	Cuttack ...	12	12	7,883	1,836	285	258	235	242	270	294
40	Poori ...	6	6	3,175	943	159	176	236	183	188	168
41	Balasore ...	10	10	6,599	2,534	611	428	492	252	435	413
	Chota Nagpore Division.										
42	Hazaribagh ...	17	17	7,951	344	17	28	52	58	72	60
43	Lohardugga ...	22	22	6,625	1,274	137	173	245	194	247	324
44	Singbhum ...	6	6	3,080	576	79	65	106	85	98	137
45	Manbhum ...	17	17	6,137	591	55	63	85	132	196	156
	TOTAL FOR THE PROVINCE ...	644	623	201,989	23,670	5,217	4,285	4,675	4,453	5,042	4,860

* There are no regula

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 10*th April* 1883.

in the Districts of the Bengal Province during each month of the year 1882.

5						6			7			8	
						Total			Ratio of deaths per 1 000 of population				
July	August	September	October	November	December	Male	Female	Total	Male	Female	Total	Mean ratio per 1 000 of previous five years	Number
97	102	68	69	62	82	580	311	891	86	42	64	95	1
103	92	52	85	35	57	472	322	794	43	60	76	57	2
34	18	18	5	7	2	98	77	175	25	18	22	24	3
380	369	305	316	387	461	2 419	1 737	4 156	1 34	1 96	1 65	1 67	4
101	116	98	149	154	168	750	731	1 481	2 38	2 11	2 24	1 51	5
52	64	75	88	124	106	454	408	862	2 60	2 29	2 14	2 68	6
127	142	162	213	184	300	1 100	974	2 074	3 47	3 05	3 26	3 37	7
107	90	123	122	155	187	844	633	1 477	1 01	80	91	81	8
120	141	167	171	184	267	1 103	656	1,759	7 49	6 29	6 90	10 00	8
227	231	290	293	339	454	1,947	1 289	3 236	1 99	1 44	1 73	2 05	
63	109	101	131	88	74	718	523	1 241	72	50	61	40	9
17	23	20	38	63	78	285	120	405	36	15	25	20	10
17	34	19	21	48	6	231	143	374	30	22	30	41	11
4	13	9	46	34	41	163	97	260	28	18	24	20	12
20	12	17	16	24	30	159	90	249	20	12	16	27	13
6	11	5	12	13	13	77	8	105	11	04	07	09	14
28	39	18	21	27	60	208	114	322	17	11	15	26	15
3	17	7	6	6	11	55	28	83	14	07	11	13	16
20	12	23	37	33	31	213	120	333	31	19	25	23	17
27	19	9	5	3	3	77	65	142	86	98	91	93	18
8	6	10	6	12	5	60	29	89	19	10	15	22	19
150	223	307	278	520	514	1 676	1 316	2 992	1 62	1 21	1 41	99	20
17	35	83	98	141	75	423	291	714	52	36	43	33	21
49	87	50	55	53	79	412	256	668	42	27	35	29	22
32	30	49	46	69	124	453	248	701	29	16	22	24	23
26	14	22	40	37	60	209	200	409	27	26	26	22	24
62	53	37	31	25	33	343	207	616	64	44	53	82	25
9	35	12	10	9	18	139	74	213	33	18	25	27	26
678	600	515	408	283	281	2,657	2 095	4 752	3 09	2 33	2 70	2 17	27
129	118	98	144	82	58	591	396	987	56	36	46	47	28
101	111	83	62	28	68	629	349	978	68	34	49	37	29
353	327	285	255	210	224	2 032	1,229	3,261	1 60	93	1 26	1 14	30
286	271	234	256	231	274	2 069	1,401	3 470	1 59	1 04	1 31	1 11	31
485	642	473	307	346	354	2,800	1 926	4 726	2 58	1 60	2 07	1 74	32
57	60	56	75	53	16	302	147	449	34	17	26	31	33
74	45	40	39	45	64	357	224	581	36	22	29	50	34
76	67	66	72	76	69	530	359	889	54	36	45	46	35
4	15	14	5	52	56	128	94	222	13	10	12	16	36
2	2	2	1	3	3	29	10	39	08	02	05	10	37
44	46	23	16	36	24	246	128	374	31	16	23	32	38
264	281	260	241	293	327	2 032	1 158	3,190	2 39	1 30	1 83	2 05	39
214	224	172	134	179	208	1,293	948	2 241	2 89	2 14	2 52	2 25	40
557	608	491	485	519	537	3,325	2,001	5,926	7 20	5 37	6 20	3 99	41
88	78	69	56	41	22	389	235	624	71	41	56	57	42
354	396	282	171	146	105	1,589	1,185	2,774	1 99	1 45	1 72	1 62	43
116	108	80	56	47	45	573	411	984	2 03	1 46	1 75	1 68	44
172	145	98	86	67	59	799	517	1,316	1 52	97	1 24	77	45
5,727	5,985	5,171	5,021	5,280	5,697	36,091	25,271	61,362	1 10	75	92	85	

villages in Darjiling.

F. W. A. DE FABECK,

Offg. Sanitary Commissioner for Bengal

APPENDIX No. II.

STATEMENT AND MAP ILLUSTRATING THE DISTRIBUTION OF CHOLERA IN BENGAL

DURING THE YEAR 1882.

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1882.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS.	Number of sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Populations of the sub-divisions.	Date of first case of cholera in the sub-divisions as indicated by mortality.	Date of last case of cholera in the sub-divisions as indicated by mortality.	Total deaths from cholera in the sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each sub-division.	NUMBER OF THOSE Affected by cholera.	NUMBER OF THOSE Not affected by cholera.
Burdwan ...	1	Burdwan or Sudder ...	639,593	January 1882 ...	December 1882 ...	1,636	January to August and November and December.	1,845	224	1,621
	2	Khulna	237,607	Ditto ...	Ditto ..	1,012	January to April and December.	759	111	648
	3	Cutwa	230,209	Ditto ...	Ditto .	1,480	January to June.	511	107	404
	4	Ranigunge	284,414	March ...	Ditto ..	1,148	March to August and November and December.	691	83	608
		District Total ...	1,391,823			5,276		3,806	525	3,281
Bankura ...	5	Bankura or Sudder ...	647,085	January ...	December ...	1,030	February and March and May to August.	3,965	158	3,807
	6	Bishenpore	394,667	Ditto ...	Ditto .	924	January to March and June to August and December.	1,598	111	1,487
		District Total ...	1,041,752			1,954		5,563	269	5,294
Birbhum ...	7	Soori or Sudder	483,921	January ...	September ..	2,264	January to August ...	1,908	266	1,642
	8	Rampurhat	310,507	February ..	July ...	329	March to July ...	1,180	50	1,130
		District Total ...	794,428			2,593		3,088	316	2,772
Midnapur ...	9	Midnapur or Sudder ...	1,269,255	January ...	December ...	826	February to July and December.	9,606	273	9,333
	10	Ghattal	287,333	Ditto ...	Ditto ...	403	January to May and November and December.	1,027	90	923
	11	Tumlook	479,218	Ditto ...	Ditto ...	1,013	January to July and October to December.	1,595	310	1,285
	12	Contai	481,996	Ditto ...	Ditto ...	1,218	January to May and November and December.	2,525	277	2,248
		District Total ...	2,517,802			3,460		14,753	959	13,794
Hughli ...	13	Hughli or Sudder ...	308,217	January ..	December ...	384	January to March and November and December.	1,065	87	978
	14	Jehanabad	352,596	Ditto ...	Ditto .	260	March to August and December.	886	101	785
		District Total ...	660,813			644		1,951	188	1,763
Serampore ...	15	Serampore	351,955	January ...	December ...	829	January, February and May and September to December.	910	106	804
Howrah ...	16	Sudder	311,644	January ...	December ...	1,074	January to June and November and December.	373	100	273
	17	Ooloobaria or Mohesrikha	323,737	Ditto ...	Ditto ...	333	January to March and December.	1,115	158	957
		District Total ...	635,381			1,407		1,488	258	1,230
24-Pergunnahs	18	Sudder, including Barrackpore and Dum-Dum.	730,406	January ...	December ...	3,774	January to May and November and December.	1,321	316	1,005
	19	Baraset	272,574	Ditto ..	Ditto ...	478	March, April and December.	902	66	836
	20	Bussirhat	323,061	Ditto ...	Ditto ...	575	January to April and October and December.	800	118	682
	21	Barripore	190,498	Ditto ...	Ditto ...	586	January to May and November and December.	667	91	576
	22	Diamond Harbour... ...	344,330	Ditto ...	Ditto ...	1,209	January to May and November and December.	1,489	441	1,048
		District Total ...	1,860,850			6,622		5,179	1,032	4,147
Nuddea ...	23	Sudder	574,973	January ...	December ...	2,032	January to June and October to December.	723	263	460
	24	Meherpore	338,554	Ditto ...	Ditto ...	2,392	January to June and November.	578	289	289
	25	Kustia	443,694	Ditto ...	Ditto ...	3,993	March to June and October to December.	967	557	410
	26	Chooadangah	254,295	Ditto ...	Ditto ...	1,223	February to May and December.	463	245	218
	27	Bongong	362,126	Ditto ...	Ditto ..	1,119	January to March and November and December.	778	125	653
	28	Ranaghat	241,205	Ditto ...	Ditto ...	241	February, March and December.	526	76	450
		District Total ...	2,017,847			11,020		4,035	1,555	2,480

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1882—continued.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS	[illegible]	NAMES OF THE SUBDIVISIONS AS SHOWN ON THE MAP	Population of the subdivisions	Date of first case of cholera in the subdivisions as indicated by mortality	Date of last case of cholera in the subdivisions as indicated by mortality	Total deaths from cholera in each subdivision during the year	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS	Number of villages in each subdivision	NUMBER OF THOSE Affected by cholera	NUMBER OF THOSE Not affected by cholera
Jessore	29	Sudder	[illegible]	January 1882	December 1882	[illegible]735	January to June and October to December	1,425	283	1,141
	30	Jhenida	[illegible]	Ditto	Ditto	2,347	January to June and October to December	808	242	766
	31	Magura	[illegible]	Ditto	Ditto	1,[illegible]47	January to July and October to December	[illegible]	280	[illegible]
	[illegible]	Narail	[illegible]	Ditto	Ditto	[illegible]	Throughout the year	733	4[illegible]	[illegible]
		District Total	1,57[illegible]			9 [illegible]		3,7[illegible]	1,2[illegible]7	[illegible]
Khoolna	3[illegible]	Sudder	[illegible]	January	December	1,[illegible]8	January, April, May and June, and October to December	803	[illegible]0	64
	[illegible]	Satkhira	[illegible]	Ditto	Ditto	1,0[illegible]8	January to May and November and December	1,[illegible]	[illegible]	[illegible]
	[illegible]	Bagerhat	[illegible]	Ditto	Ditto	[illegible]	April to June and October to December	80[illegible]	19	[illegible]
		District Total	[illegible]			3,[illegible]		[illegible]	[illegible]	[illegible]
Murshidabad	[illegible]	Berhampur or Sudder	[illegible]	January	December	1,678	January to June and November and December	[illegible]	[illegible]	[illegible]
	[illegible]	Lalbagh	[illegible]	February	June	[illegible]	April to June	[illegible]	[illegible]	[illegible]
	[illegible]	Jangipur	[illegible]	Ditto	December	77	January to May and December	994	[illegible]	860
	[illegible]	Kandi	[illegible]	January	Ditto	[illegible]	January to May and September to December	[illegible]	111	[illegible]
		District Total	[illegible]			3,[illegible]		3,911	[illegible]	[illegible]
Dinagepore	[illegible]	Sudder	1,[illegible]	January	December	[illegible]	December	7,108	[illegible]	7,0[illegible]0
Rajshahye	41	Beauleah or Sudder	[illegible]	January	December	1,[illegible]	January, March to July and October to December	1,949	[illegible]	[illegible]
	42	Nattore	[illegible]	Ditto	Ditto	1,389	April, June and October to December	1,602	175	1,427
	43	Nowgong	[illegible]	Ditto	Ditto	109	January, April, July, and December	1,[illegible]	62	[illegible]
		District Total	1,33[illegible]			[illegible]789		[illegible]	471	4,1[illegible]1
Rungpore	44	Sudder	[illegible]	January	November	492	January and May to July	[illegible]	[illegible]8	1,7[illegible]7
	[illegible]	Nilphamari or Forsadia	[illegible]	March	December	4	December	[illegible]	7	[illegible]
	46	Kurigram	[illegible]	January	Ditto	1,019	January to June and November and December	808	[illegible]	[illegible]
	47	Gaibandha	[illegible]	Ditto	Ditto	[illegible]17	August to December	1,2[illegible]	35	1,189
		District Total	[illegible] 984			1,770		[illegible]	[illegible]04	4,002
Bogra	48	Sudder	734,358	January	December	1,[illegible]01	July and September to December	4,176	269	3,907
Pubna	49	Pubna	[illegible] 964	January	December	1,877	January, March to July, and September to December	1,348	353	995
	50	Serajgunge	[illegible]	Ditto	Ditto	3,240	April to June and September to December	1,8[illegible]8	520	1,368
		District Total	1,311,[illegible]			5,1[illegible]		3,[illegible]	873	2,3[illegible]
Darjiling	[illegible]	Sudder	[illegible]	None	None		None	No regular villages.		
	[illegible]	Kurseong	[illegible]	None	None		None			
	3	Silliguri	[illegible] 41	March	May	5[illegible]	June			
		District Total	[illegible]			5[illegible]				
Julpaiguri	54	Julpaiguri	[illegible]	March	December	33	November and December	322	7	315
	[illegible]	Alipur or Western Dwars	[illegible]	None	None		None	119		119
		District Total	581,[illegible]62			33		441	7	434
Dacca	56	Sudder	[illegible]	January	December	2,282	January to May and August to December	2,342	428	1,914
	57	Narayangunge	[illegible]	Ditto	Ditto	1,287	January to April and August to December	1,939	356	1,583
	58	Munshigunge	[illegible] 447	Ditto	Ditto	814	January to April and September to December	460	137	323
	59	Manickgunge	[illegible]	Ditto	Ditto	1,971	January, April and August to December.	983	269	714
		District Total	2,116,3[illegible]0			6,354		5,724	1,190	4,534

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1882—continued.

1	2	3	4	5	6	7	8	9	10	11
									Number of those	
Districts.	Number of sub-divisions of mortuary registration	Names of the Sub-divisions as shown on the Map	Populations of the sub-divisions.	Date of first case of cholera in the sub-divisions as indicated by mortality	Date of last case of cholera in the sub-divisions as indicated by mortality	Total deaths from cholera in the sub-divisions during the year	Period of Maximum Intensity of the Disease as represented by Deaths	Number of villages in each sub-division.	Affected by cholera.	Not affected by cholera
Faridpore	60	Sudder ...	620 545	January 1882	December 1882	1,817	January March to May and September to December	1,363	366	997
	61	Goalundo ...	[illegible]21,485	Ditto	Ditto	[illegible]	January, April May and October to December	730	198	598
	62	Madaripore ...	689 704	Ditto	Ditto	2 270	January March to May and August to December	1,206	498	708
		District Total	1 631 734			5 038		3,3[illegible]	972	2,[illegible]3
Backergunge	63	Burisal ...	814 59[illegible]	January	December	4 [illegible]05	March to July and November and December	1,541	673	868
	64	Perozepur	44[illegible],[illegible]	Ditto	Ditto	1 [illegible]04	March to June and October to December.	771	347	424
	65	Patuakhally ..	4[illegible] 7[illegible]8	Ditto	Ditto	2,176	March to June	713	253	460
	66	Bhola ..	212,2[illegible]0	Ditto	Ditto	19[illegible]	March to May and December	270	57	213
		District Total	1 900,889			8 570		3 [illegible]95	1 330	1,965
ymensing	67	Sudder	1 332 631	January	December	1, [illegible]05	January to June and October to December	3,765	225	3,540
	68	Jamalpur	4[illegible]7 766	Ditto	Ditto	582	October to December	981	119	862
	69	Kishoregunge	467,[illegible]0	Ditto	Ditto	808	January to April and October to December	918	157	751
	70	Attia .	754,241	Ditto	Ditto	3,303	May and October to December	1,913	304	1,609
		District Total .	[illegible] 051 986			5 998		[illegible] 597	805	6,792
ipperah	71	Sudder	703 540	January	December	1,279	January to April and December	3 759	359	3,400
	72	Brahmanbariah	531 417	Ditto	Ditto	1 043	January to May and October to December	1 307	237	1,070
	73	Chandpur	284 381	Ditto	Ditto	343	April to June and November and December	1 239	62	1,177
		District Total ..	1 519 338			2 665		6 305	658	5,647
hittagong	74	Sudder or Chittagong	970,993	January	December	2 5[illegible]1	January and March to July	918	270	648
	75	Cox's Bazar .	161,[illegible]48	March	Ditto	183	March to May	251	22	229
		District Total	1,132 341			2 744		1 169	292	877
oakhalli	76	Sudder or Noakhalli ...	578 797	January	December	200	April to September and December	1,858	86	1 772
	77	Fenny	241,975	Ditto	Ditto	68	January February and April	[illegible]38	28	[illegible]10
		District Total .	820,772			268		96	114	2,[illegible]
atna ..	78	Sudder or Patna . .	585,887	January	December	1,711	May to August	1,879	357	1,521
	79	Dinapore ...	166 129	Ditto	November	261	June to August	401	48	3[illegible]3
	80	Barh .. .	376 074	February	December	908	May to July	1 188	180	1 008
	81	Behar	628,767	April	October	2,198	May to August	2 516	4[illegible]7	2 089
		District Total ...	1,756,856			5 078		5 983	1 010	4,973
ya ...	82	Sudder or Gya .. .	805,364	April	November ..	2,230	April to October	2 768	174	2 594
	83	Jehanabad .	385,189	May	December	1,[illegible]61	May to August	713	160	553
	84	Aurungabad .	415,841	June	October	368	June to August	1 633	56	1,577
	85	Nowada ..	486,148	Ditto	September	738	June to September	1 305	85	1,220
		District Total ..	2,124,682			4,095		6 219	475	5 744
ahabad	86	Arrah	700,273	February ..	December .	1 488	May to September and December	1,150	135	1,015
	87	Buxar	423 193	January .	Ditto	586	June to September	685	86	579
	88	Sasseram	519,207	Ditto ..	September	1,096	May to September	1,712	1[illegible]8	1 574
	89	Bhubush	322 236	Ditto ..	Ditto ...	477	May to August	1 300	71	1 229
		District Total .	1,964,909			3,047		4,847	490	4 [illegible]97
ozufferpore ...	90	Sudder	1,019,635	April ..	November ...	5,436	May to September	3,082	453	2,62[illegible]
	91	Sitamarhi	887,894	February ..	Ditto ...	1 785	June to November	96[illegible]	138	8[illegible]5
	92	Hajeepur	724,531	January .	December	4,888	May to August	1,743	536	1,207
		District Total .	2,632,060			12,109		5,788	1,127	4,661
rbhanga ...	93	Durbhanga	969,999	March	December .	5,091	March to December ..	1,065	557	508
	94	Tajpore	755,943	February	August	4,329	April to August ..	804	329	475
	95	Mudhubani	907,505	Ditto ..	December	1,496	February to August	1 063	552	511
		District Total ...	2,633,447			10,916		2,932	1,438	1,494

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1882—concluded.

1	2	3	4	5	6	7	8	9	10	11
Districts	Number of the sub-divisions of the district	Names of the sub-divisions as shown on the map	Populations of the sub-divisions	Date of first case of cholera	Date of last case of cholera	Total number of deaths from cholera	Period of maximum intensity of the disease as represented by deaths	Number of villages in each sub-division	Number of those affected by cholera	Number of those not affected by cholera
Sarun	96	Sudder or Chupra	[illegible]	May 1882	September 1882	[illegible]	May to September	1,694	176	1,518
	97	Sewan	[illegible]	April	Ditto	[illegible]	Ditto	[illegible]	[illegible]	1,274
	98	Gopalgunge	[illegible]	Ditto	November	[illegible]	April to September	[illegible]	18	1,140
		District Total	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]
Chumparun	99	Sudder or Motihari	1,017 [illegible]	[illegible]	November	[illegible]	May to September	[illegible]	210	890
	100	Bettiah	[illegible]	April	October	[illegible]	Ditto	[illegible]	[illegible]	916
		District Total	[illegible]			[illegible]		[illegible]	491	1,809
Monghyr	101	Monghyr	[illegible]	January	November	[illegible]	April to August	1,171	390	781
	102	[illegible]	[illegible]	February	September	[illegible]	May to August	[illegible]	[illegible]	1,015
	103	Begusarai	[illegible]	January	August	[illegible]	April to August	[illegible]	111	477
		District Total	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]
Bhagulpore	104	Sudder	[illegible]	February	December	887	July to August	1,061	[illegible]	763
	105	Banka	[illegible]	March	November	[illegible]	March to November	[illegible]	[illegible]	710
	106	Madhipura	[illegible]	February	August	[illegible]	[illegible] to August	[illegible]	[illegible]	[illegible]
	107	Soopul	[illegible]	Ditto	June	[illegible]	February to June	[illegible]	[illegible]	747
		District Total	[illegible]			[illegible]		[illegible]	[illegible]	2,693
Purneah	108	Sudder	[illegible]	February	June	[illegible]	February to May	[illegible]	[illegible]	1,389
	109	Araria	[illegible]	Ditto	Ditto	[illegible]	Ditto	[illegible]	[illegible]	494
	110	Kissengunj	[illegible]	Ditto	November	[illegible]	February to April	[illegible]	111	1,102
		District Total	[illegible]			[illegible]		[illegible]	710	2,995
Maldah	111	Sudder	710,448	February	December	1,058	March to May and October to December	[illegible]	[illegible]	2,414
Sonthal Pergunnahs	112	Dumka	[illegible]	February	August	123	April, June and July	[illegible]	5	2,385
	113	Deoghur	[illegible]	January	December	[illegible]	January to August	[illegible]	87	2,878
	114	Godda	[illegible]	February	November	417	April to September and [illegible]	[illegible]	107	1,683
	115	Pakour	[illegible]	Ditto	September	[illegible]	April to August	[illegible]	[illegible]	972
	116	Rajmahal	[illegible]	January	December	139	March to September	[illegible]	[illegible]	1,286
		District Total	[illegible]			[illegible]		[illegible]	312	9,204
Cuttack	117	Sudder or Cuttack	[illegible]	January	December	[illegible]	April to August and December	1,200	396	804
	118	Kendrapara	[illegible]	Ditto	Ditto	[illegible]	March to June and December	2,103	502	1,601
	119	Jajpore	[illegible]	Ditto	Ditto	[illegible]	Ditto	[illegible]	519	1,984
	120	Jugatsingpur	[illegible]	Ditto	Ditto	[illegible]	April to November	[illegible]	244	1,773
		District Total	[illegible]			[illegible]		7,883	1,721	6,162
Poori	121	Poori	565,082	February	December	2,576	March to August and November and December	2,126	460	1,666
	122	Khoorda	[illegible]	January	Ditto	[illegible]	February to September and November and December	1,041	220	820
		District Total	888,487			3,783		3,175	680	2,486
Balasore	123	Sudder or Balasore	519,707	January	December	3,485	January to August and November and December	3,570	950	[illegible]
	124	Bhudruk	425,573	Ditto	Ditto	[illegible]	January, March to July and December	3,029	644	[illegible]
		District Total	[illegible]			[illegible]		6,599	1,594	5,005
Hazaribagh	125	Hazaribagh	[illegible]	January	November	[illegible]	April to August	4,062	20	[illegible]
	126	Giridhi or Pachamba	432,604	April	October	[illegible]	April, May, July and September	3,889	11	[illegible]
		District Total	1,104,742			[illegible]		7,951	31	[illegible]
Lohardugga	127	Sudder	1,121,422	February	September	109	May to August	4,054	12	[illegible]
	128	Palamow	481,822	None	None		None.	2,571		[illegible]
		District Total	1,609,244			109		6,625	12	[illegible]
Singbhum	129	Sudder	5,61,064	February	August	65	April to July	3,080	22	[illegible]
Manbhum	130	Sudder	891,644	January	December	879	April to August	4,347	180	4,167
	131	Govindpore	196,584	Ditto	November	436	February to June	1,790	111	1,679
		District Total	1,058,228			1,315		6,137	291	[illegible]

OFFICE OF SANY. COMMR. FOR BENGAL,) F. W. A. DE FABECK

APPENDIX No. III.

REPORT OF THE COMMISSION APPOINTED TO ENQUIRE INTO THE CAUSES OF THE EPIDEMIC PREVALENCE OF FEVER DURING 1880 AND 1881.

Report of the Commission appointed to enquire into the causes of the epidemic Fever in Nuddea.

"In the Resolution of the 10th November 1881, in the Medical and Municipal Department, His Honor the Lieutenant-Governor, in noticing that the presence in Nuddea of a malarious fever, in a severe epidemic form, two seasons in succession seemed to point to some local cause distinct from climatic influence, appointed us as a Commission to visit the worst villages, and to examine carefully their sanitary condition and the cause of their unhealthiness. We were further directed to inspect, as far as possible, all the roads constructed during the past 15 years, and to ascertain whether there was any truth in the statement so often made of the inadequacy of the waterway provided in such roads; to enquire into obstruction of drainage by the silting up of old channels and creeks; to give special attention to the supply of drinking-water, and endeavour to induce the people, where the water-supply is now deficient, to clean old tanks and excavate new ones and place them under the charge of the village punchayets, in order that they may be kept clear for water-supply; to impress upon the more intelligent villagers the necessity of purifying water and show how simply and cheaply an efficient filter can be constructed; to call upon the zemindars to assist in opening and draining channels and excavating tanks; and to impress upon the people the precaution of sleeping on raised platforms or *machans*.

2. "The sum of Rs. 50,000 was likewise placed at our disposal to meet the cost of making such improvements as we might consider *urgently necessary*.

3. "*Tour*.—In pursuance of the above orders, we remained on tour in the Nuddea district from the beginning of December 1881 to the middle of March 1882, when the lateness of the season compelled us to return to Kishnaghur without having been able to visit either Beerbhoom or Jessore.

4. "During our tour we visited and examined some four hundred villages, traversed the roads made within the last 15 years and many of earlier construction, inspected numerous embankments, and followed the courses of several old rivers. The route taken by us whilst making our investigations and enquiries will be found marked on a map appended to this report. [Not printed].

5. "*Topography*.—The district of Nuddea is a vast alluvial plain intersected by six large rivers, numerous smaller channels, and by a labyrinth-like network of forsaken river-beds and old rivers in every stage of decay and effacement. It is dotted with lagoons and marshes, and studded with numerous towns and villages, which are frequently hidden in clumps of bamboos and clusters of trees. The lands are closely cultivated. As in all deltoid formations, the fall of the country is away from the rivers, but the regularity of the slope is broken up by the tangle of rivers and river-beds which cross and recross one another and obstruct the natural lines of surface drainage.

6. "*History of the fever*.—It is in this district that a severe malarious fever has prevailed for the past two years. The reports of Dr. Sutherland and others have shown the history of epidemic fevers in Bengal in former years, and our enquiries have brought nothing new to light. It is quite clear that fever has long been present in Nuddea, and in villages such as Oola, Ichapore, Srinugger, and Jaharpore it is never dormant for any length of time.

7. "The present outbreak was first noticed in the middle of 1880, when the deaths from fever in this district rose from 1,927 in July to 3,759 in August, culminating in November with a mortality of 12,822. The tracts chiefly affected during the period of greatest fever mortality in that year (*i.e.*, the six months, August 1880 to January 1881) were the sub-divisions of Bongong, the Sudder, and Meherpore. In Chooadanga the more easterly portions alone were affected, the condition of the western thanas being normal. In this sub-division, according to Baboo Judoo Nath Bose, sub-divisional officer, the fever was traced to the village of Hurinakunda, in the Jhenidah sub-division of Jessore, where it prevailed virulently in 1879. From this place it was transferred in 1880 westwards to Jaharpore and Paikpara and other villages situated on the banks of the Bhatahi, a stream formerly connected with the Kumar, but now a closed water-course. The fever did not, in 1880, travel further than Kulcherra, a village about two miles north-east of Chooadanga town. Since then the disease has spread over the whole sub-division.

In 1880.

8. "The worst thana, however, in 1880 was Gaighatta, in the south of Bongong, where the recorded fever death-rate for the half-year from August 1880 to January 1881 was 41·25 per mille. The few neighbouring villages of the 24-Pergunnahs, such as Janapole, Pairigatchi, &c., are said to have been equally affected. The thanas of Hanskhalli, in the centre of the district, and Teyhutta, on the north-west, come next, giving respectively fever death-rates of 39·07 and 36·75.

9. "Generally speaking, in the season of 1880 fever prevailed over a tract of country situated on a line drawn across the district from south-east to north-west. The sub-divisions of Ranaghat (with the exception of portions of Jaguli) on the south and Kooshtea on the north escaped this visitation.

10. "The total number of deaths from fever for the calendar year of 1880 was 54,420; but as this epidemic did not break out till July, for the purposes of comparison it may be better to consider the months from August to January as showing the incidence of fever, in which case the mortality may be put at 51,783 for those six months.

11. "In 1881 the virulence of the fever appears to have spread northwards and westwards, subsiding very considerably in the southern subdivisions, where in thana Bongong the highest death-rate was 28·54, while in Ranaghat it did not rise above 19·19. This subsidence of fever in the south of the district was not preceded or accompanied by any local alterations or improvements.

In 1881.

12. "Kooshtea sub-division, as a whole, again escaped; the highest recorded death-rates being 19·81 from Bhaluka in 1880, and 18·46 for Daulutpore in 1881. It must not, however, be supposed that there was no fever. Our enquiries showed that some isolated villages or groups of villages, such as Duhakhola and Durgapore, suffered severely.

13. "In the rest of the district, that is, in the Sudder (except Nuddea outpost) Meherpore, and Chooadanga, the fever was much more severe than in the previous year, Chooadanga thana itself showing a fever death-rate of 59·62 per 1,000 for six months (to January 1882); while in Kaligunge the rate rose from 28·89 in 1880 to 56·92 in 1881. It should be noted, too, that the villages in Cutwa of Burdwan and Burwa of Moorshedabad, directly adjacent to Kaligunge thana, also suffered very severely towards the close of this year

14. "The total number of deaths from fever for the calendar year 1881 was 73,196, an increase of 18,776 over the previous year; but as a fact the fever at its height was hardly more severe, as the six months from August 1881 to January 1882 show a return of 52,145 deaths as against 51,783 for the corresponding period of the year before.

15. "The disease affected the young and old with special severity. The death-rate for children under one year was 139·21 per mille during the calendar year of 1881. It falls to 24·84 in the period "20 and under 30 years," and again rises to 83·25 above sixty years.

16. "Unfortunately the mortuary registration has been so very irregular and imperfect that the above figures give only approximate results, our enquiries showing that the mortality was actually greater.

17. "*Rainfall.*—The rainfall of the district, as taken in eight different places, was examined as far back as records were available; but the results varied so considerably even between neighbouring places that it is not safe to attempt any deduction. Speaking generally for the whole district, in 1880, when the fever broke out, more rain fell than usual; but, on the other hand, the greatest fever mortality is recorded where the rainfall was rather scanty.

Probable causes of fever.

18. "In 1881 the rainfall was generally short, and the fever was again most virulent in those tracts where the fall was more deficient. The natives in places, especially west of the Jellinghi, referred the fever to this deficiency.

19. "In considering how far the natural surface drainage of Nuddea is affected by roads, embankments, &c., and what works should be undertaken for the improvement of water-channels, it will be convenient to divide Nuddea into five sections, namely, (1) between the Bhagiruttee and Jellinghi rivers; (2) north of the upper Matabhanga and the Kumar rivers; (3) between the Jellinghi and Matabhanga rivers; (4) the tract enclosed by the Kumar, the lower Matabhanga (down to Kissengunge), and the Ichamati rivers; and (5) between the Ichamati, the lower Matabhanga (below Kissengunge), and the Hooghly. Each of these sections is separated from the adjacent ones by broad rivers, and consequently it is obvious that any *local* obstructions to drainage in one can have no possible effect on the others.

Obstruction of drainage by inadequacy of waterway in roads and by silting up of old channels and creeks, &c.

20. "In the first tract we found ample waterway on every road. On some the waterway was provided by bridges, and on others (famine roads of 1874) by gaps left wherever necessary. There are no permanent embankments of any consequence.

Section I.

21. "It is deserving of particular notice that this tract of country, which has been visited by the fever epidemic with special severity, is absolutely free from artificial obstruction as far as we could ascertain. Some of the people in the neighbourhood of Goteparah were anxious to have an attempt made to open an old bed of the Bhagiruttee, known as the Goorgooriah khal, near that place, and also to open the khals from the Jellinghi at Beerpore to Mooragatcha. The outlay would be great, and the success of the schemes very doubtful, and in the case of the latter project the benefit would be slight even if the work were successful.

22. "In regard to the second tract, which, as already noticed, has, comparatively speaking, almost entirely escaped the fever, the only roads that in any way impede drainage are the Poradaha and Damookdia State Railway and the road from Durgapore to the Halsha railway station. The principal obstruction in the former is the closing of the Burral khal, on the second mile of the line, regarding which loud complaints were made to us, and apparently with reason. The want of waterway on the latter road is slight, and we understood that the matter was already receiving the attention of the Road Cess Committee. An old road from Naopara (near Mirpore railway station) to the Kooshtea-Dadupore road had evidently at one time been a serious obstruction to drainage; but the bridges on it were carried away years ago by the floods, and the gaps left (seven in number) have been widened by successive floods until there is ample passage for the water.

Section II, Kooshtea sub-division.

23. "The only embankments are those which enclose an egg-shapped basin near Alumdanga. They were constructed many years ago, and are necessary to protect the crops on the low lands, the rain-water being let out by cuts at the close of each rainy season,

24. "In the third section, fever has prevailed more or less during the past two years, and the mortality has been great. This tract is peculiarly liable to flood from both the Jellinghi and Matabhanga rivers. It was formerly traversed by two important water-courses, the Bhyrub river and the Unjonah khal, which flowed from north-west to south-east, and both of which connected the Jellinghi with the Matabhanga: they are now dead streams.

Section III.

25. "*Roads.*—As regards the roads in this section, the Meherpore and Chooadanga road requires considerable additional flood-way, though in ordinary seasons it probably passes the water without obstruction. On the road from Narainpore to Ramnugger a sluice is much required at Fullia, in thana Korempore, to admit water from the Jellinghi river at will. This, however, is a work that might be carried out under the Embankment Act by the local authorities. The roads from Kissengunge to Kishnaghur and from Bagoolah to Kishnaghur are provided with sufficient waterway to pass all *local* drainage; but in high inundations when the Bhagiruttee embankments above Moorshedabad breach, the Jellinghi becomes gorged, the local embankments give way, and an enormous volume of water is poured across country and intercepted by these roads. Probably the best way to deal with this difficulty would be either to effectually strengthen the Bhagiruttee embankments, or to lower the level of the above two roads and thus allow the floods to sweep over them. At present, on the occasion of exceptional floods, the country enclosed between these roads and the Matabhanga river and Eastern Bengal Railway is waterlogged for several weeks.

26. "There are embankments in this tract on the left bank of the Jellinghi on the Julkur Pultah Doho khal, and on the right bank of the Upper and Lower Matabhanga. The first are slight in character and have been long in existence; they do little or no harm, and when the Bhagiruttee embankments give way, retard the flood sufficiently long to enable the ryots to prepare for its effects. They would probably be mostly useless and be allowed to fall into decay if the Bhagiruttee embankments were made secure. The embankments on the Julkur Pultah Doho khal are under Government, and are known as the Kooly khal embankments, and are absolutely necessary to be retained.

Embankments.

27. "The only embankment on the Upper Matabhanga that requires notice is the Akubpore bund, which is situated at Akubpore, near Bamoondee, and was constructed 10 or 12 years ago, previous to which temporary bunds were put up by the indigo factors and removed after the indigo crop was cut. So long as temporary embankments only existed, which were annually allowed to give way, the country inland received each rains a fresh supply of good water; but since this has been stopped the water in most parts of the thana has become excessively bad and unfit for even bathing, much less drinking purposes. We had careful enquiries made, and found that out of 149 villages 61 desired the removal of the bund, 27 wished it to be retained, and 61 were indifferent. It would probably lead to difficulties if the bund were at once removed, and we would therefore recommend that, as it is close to where the bank of the Matabhanga is rapidly cutting away, it should be allowed to remain until it is cut through by the advancing river, when its re-erection should be prevented, unless those interested are prepared to provide the funds for erecting the new embankment, and for adequately sluicing it under competent professional advice.

28. "The embankments on the right bank of the Lower Matabhanga extend from below Chooadanga to above Kacheekhatta, and, with the exception of the Kacheekhatta bund, which is a Government work, were made by Mr. Skrine when Assistant Magistrate at Chooadanga. The Government bund is only about two miles in length, and is required to protect very low lands; in former times indigo-planters put up temporary bunds where Mr. Skrine's bunds now run, and the crops were temporarily protected and secured; whilst the bund bursting afterwards admitted of the land receiving a rich deposit from the silt brought in with the flood waters, and the water-supply of the people being renewed. This has now been entirely changed; a fine khal near Kudampore has been closed, and many other small channels, while the inland water-supply has deteriorated in quality. The embankment burst in 1879 in a few places, and let in fresh water, and the breaches have not been repaired; the river is now approaching the embankment at many points, and will eventually cut through it in several places. These bunds should not be allowed to be re-erected, unless they are sufficiently sluiced under the advice of a competent engineer. It is only right that we should mention that the people are greatly in favour of retaining the bunds, preferring the security of their crops to what they consider the doubtful advantage to their health.

29. "The most important works which it is desirable to undertake in this tract in order that the people may get fairly good drinking water are the opening and improvement of the Bhyrub river and the Unjonah khal, both of which are now closed at their entrances, and for a considerable distance down.

Rivers and khals.

30. "We are quite alive to the difficulty of resuscitating a dead river, but there is a peculiar feature in the case of the Bhyrub which renders success not very improbable. We refer to the (Moorshedabad) Bhyrub having through changes in the parent stream now become the main Jellinghi, and to the water being in consequence backed up in the upper reaches of the Jellinghi from which the Nuddoa-Bhyrub takes off. We therefore propose to attempt to make a channel for the water which enters the Upper Jellinghi by a cut from that river to the Bhyrub, about two miles in length and 150 feet in breadth at top. This new cut would shorten the Bhyrub by several miles, as will be seen from the map at the end

of this report; [not printed] and it already has a good outfall at the Matabhanga end. The cost would be about one lakh of rupees, of which perhaps one-sixth could be raised by local subscription. This would admit fresh water through a thickly-populated and extensive tract where it is much required. The entrance o the cut would be liable periodically to silt up, and would very probably require to be occasionally cleared out, but how often, and at what cost, we have no data to determine. If the work were successful, it would also open out a large rice-producing country to boat traffic.

31. "A project for deepening the Unjonah khal, and placing an inlet sluice at the Kishnaghur end, and a regulating sluice at the Matabhanga outlet, at an estimated cost of one lakh of rupees, has already been preparedby the Irrigation Branch of the Public Works Department, and is now under the consideration of Government. It provides for letting about six feet of water into the khal during ordinary high floods, say for about one month each year, and would doubtless be a very great improvement. It is evident, however, that the project has principally been prepared with a view to the surface drainage of the town of Kishnaghur, and although it would also give better water to the villages along the banks of the khal, we do not think that the scheme goes far enough, and would suggest that the cut should be three feet deeper, and be 20 feet instead of 10 feet in width at bottom at the Kishnaghur end. If this were done, the vlages along the khal would get a greatly improved water-supply, and the khal could be much more effectually flushed out. The cost of the work would probably be raised by these proposals from a lakh to a lakh and-a-half of rupees.

32. "We also think that it would probably be desirable to connect the Kalinga khal with the Jellinghi, by a cut near Chupra, sluiced at its head, and we would suggest that a qualified officer should be sent to ascertain the probable cost; and the extent to which those interested are prepared to subscribe.

33. "The advisability of deepening and sluicing the Sarsatti khal and its branches, and thereby enabling the water to be run rapidly off 10 or 12 square miles of low land in the cold weather, was pressed on us by those interested. At present the khal is bunded in the rains to prevent the river water entering, and the bund cut in October to let the rain water out from the Chuchookhala bhil. The question appears to be one of an agricultural rather than a sanitary nature, what is aimed at chiefly being to admit of the water being run off as quickly as possible to get in the rubbee crops. The scheme might be carried out at the cost of those benefiting by the work.

Section IV.

34. "*Roads*—In the fourth tract, which is literally seamed with old river beds, fever was particularly severe in 1881. Here we saw the only road during the whole of our investigation on which the provision of waterway had been systematically neglected; this was a very old road between Karagola and Ramnuggur, which crosses several beds of dead streams and rivers, with very insufficient waterway, and in some cases with no opening at all. We found the sub-overseer closing the breaches made by the water last year in its endeavours to escape, instead of leaving ample provision for waterway. This road should receive the urgent attention of the Road Cess Committee. We consider that a few culverts and small bridges would be desirable on the following roads:—Chooadanga to Sindreah and Kalapole, Kissengunge to Kotechandpore, Moheshpore to Chowgacha, Baghda to Garapotta, and Garapotta to Bongong. There was, however, no serious obstruction to drainage on the above roads, and in fact the last three are barely raised above the level of the country.

35. "*Embankments.*—The principal embankments in this tract are on the left bank of the Matabhanga from near Chooadanga to Moonsheegunge, and on the right bank of the Kumar from Kesabpore through Oosmanpore, Hurdui, and Kumaree to near Alumdanga: all these appear to have been either constructed or repaired by Mr. Skrine. On the Matabhanga they are low, and fast wearing down lower, and in parts will soon disappear in the advancing river. Their reconstruction should not be allowed unless they are properly sluiced, and the people would probably be better without them altogether, as the water-supply would be improved and the lands fertilized. To ascertain this, however, with certainty would require a closer enquiry than we were able to give to the matter. Several small cuts have been made in the Kumar embankments to let out the rain-water which lodges behind them: these cuts are of course reclosed. A few small sluices are required at such places. Near Alumdanga there are two breaches which have been left unclosed. If these embankments are again repaired the work should be carried out under professional supervision, and sluices be provided to allow of water being let in or out.

36. "We consider professional advice necessary in most cases of construction and renewal of river embankments, in order that the effect of a proposed work in stopping the natural escape of the spill across country and thereby raising the flood-level of the river below, and confining the floods to a few main arteries, may be fully considered before a work is undertaken. The Matabhanga and Kumar embankments, constructed by Mr. Skrine, tend to raise the flood-level below them and to concentrate the flood discharge crossing the Eastern Bengal Railway on to a few large bridges, instead of allowing it to escape by the whole of the flood openings provided on that line. Professional advice is also required to determine the number and description of sluices requisite to admit an adequate supply of water to a tract of country enclosed by an embankment—an important consideration which has in most cases been overlooked.

37. "There is a bund at Jeebunnuggur on the Bhyrub, which is sometimes cut to obtain water, the result of which is that 200 or 300 villages in the Bongong sub-division are said

to be more or less submerged; for this reason the bund should be sluiced, and should not be allowed to be cut.

38. "*Rivers and khals.*—In this tract we have a number of dead streams which were once large rivers; these are the Bhatahi, the Cobaduck or Bhyrub, the Nobogunga, and the Mysore-Chitra, and the advantage which would accrue to numbers of villages in both Nuddea and Jessore if these were re-opened has been impressed upon us in several quarters, and we fully admit this; we are, however, of opinion that the idea is impracticable. Mr. J. Fergusson in his paper "on recent changes in the delta of the Ganges," read before the Geological Society of London,* has shown how the changes in these dead rivers occur, and why they leave their old beds and take new courses, and he aptly remarks that the course of nature in this matter can be no more interfered with than a pendulum 39 inches in length can be made to beat once in two seconds of itself. It can be forced to do so for a time, by the application of machinery; but directly the pressure is removed, it will rapidly return to its normal beat. So it is with these rivers; it is their office to raise the delta by the deposition of silt, and each river flows in a given course until it has completed its work, when it either changes its direction or dies, and a new river is opened out elsewhere. The application of various expedients may retard the operation of natural laws for a time, but eventually nature will effect her end. The rivers above alluded to are already dead; to resuscitate them is practically impossible. The cause of the change above referred to is this: A river runs in a given course, gradually elevating its bed and the country near it to or above the level of the rest of the adjacent delta, until one of two things happens, namely either the river overflows into a lower tract of country, and commences to raise the new tract, or, if that part of the delta is practically levelled up and completed, the river is gradually choked by its own sediment and dies, and a new river is opened out in some other part of the delta, where the land is lower, and requires raising. The above rivers have followed this latter course; the delta in Nuddea and western Jessore has been raised and practically completed, and by the gradual deposition of silt, the line of drainage, which was formerly from north-west to south-east, is now from north-east to south. In other words, the work that had to be performed by the Bhyrub, the Cobaduck, the Nobogunga, and the Mysore-Chitra, has been completed, and the rivers have died. In their place the little Elankhali khal has opened out into the great Madhumati, and the Gorai has enlarged; and, to use Mr. Westland's words, the formative energy has been carried at one bound from the west of the Jessore district to the east of it.

* (*See* Volume XIX of the Quarterly Journal of the Geological Society, 1863.)

(*See* Westland's Jessore.)

39. "It has been argued that the Eastern Bengal Railway was originally constructed with "absurdly inadequate" waterway, and that this has had a good deal to do with the deterioration of these rivers; but we do not concur in this opinion, for they were all dead many years before that line was made. The belief probably arose as follows: In 1871 the Bhagiruthee embankments burst for the first time since 1856, and an enormous volume of water was suddenly poured across the country in consequence, and thrown against the railway; and the waterway on that line, which had hitherto been ample to pass all flood-water that crossed it, was quite inadequate to pass this unexpected additional amount, and the line was breached in several places. Additional waterway has since been provided to guard against a reoccurrence of a similar accident. We see no reason for a moment to suppose that, had the railway not existed, any of the old rivers would have again opened out, or that matters would have been different from what they now are.

40. "Another point that has been urged is that Government has been apathetic in the past, and that small amounts judiciously expended on the Nobogunga, Bhyrub, and other rivers, would have prevented their closing. We do not concur with this for the reasons already given, but consider that any money spent would have been simply thrown away, and that the rivers were choked by natural laws which must have prevailed in the end, although undoubtedly, in the case of the Bhyrub-Cobaduck, its final extinction was hastened by the construction of a cut-off near Ramnuggur on the Matabhanga, about 60 years ago. We would also notice that two attempts were actually made to keep the Bhyrub-Cobaduck open, one at its off-take from the Matabhanga, the other where the Bhyrub and Cobaduck bifurcate. The works were carried out under the direction of Mr. John May, who had been specially brought out from England to manage the Nuddea rivers, and both attempts resulted in complete failure. In regard to the Nobogunga, the practicability of re-opening it was fully enquired into in the years 1876 and 1877, and Government in the Public Works Department decided that the enquiry conclusively showed that it would be "unadvisable to undertake the re-opening of the river either for navigation or even for irrigation purposes."

(No. 746C of the 15th of August 1878).

41. "On the general question of re-opening the whole of these rivers we would remark that the Upper Matabhanga does not even now bring down sufficient water to prevent the Kumar from deteriorating. If such is the case with a stream still living, how hopeless must it be to expect that the Matabhanga would, in addition, keep open a number of dead rivers like the Nobogunga, Byrub, &c., even should artificial connections be effected.

42. "It has also been urged by Mr. Skrine and others that the construction of the Eastern Bengal Railway has caused saturation of the sub-soil in Eastern Nuddea and Jessore. A glance at the map will show that this is impossible; the railway runs parallel and close to the general course of the river Matabhanga, whilst the fall of the country trends away from that river to the south-eastward. If the waterway were inadequate, the effect

would be to divert the flood-water into the river Hooghly, and thus keep those tracts drier, and so prevent any general water-logging. As a fact, observations in December of water-level in wells showed it to be from 15 to 24 feet from the general soil surface level in the west and north-west of the district. This also was about the observed depth at which water flowed out from scarped banks of rivers, proving that there was no water-logging of the surface soil, or even of the soil generally, down to the depth of at least 15 feet. In the south and south-east of the district the subsoil water level is somewhat higher. In fact, as Dr. Sutherland observed in 1868, "the district is becoming more and more arid, tanks and other reservoirs of water dry up even before the hot season, tanks full to overflowing in the rains rapidly dry up—facts which prove that there has been of late no increase or excess of moisture in the soil." The very jungle, contrary to the assertions of some natives we met, as Dr. Lidderdale points out, is of a kind that prefers a dry to a damp habitat. In the villages themselves no doubt water-logging does occur, and Dr. Coates has clearly pointed out the cause of this in the following words*:—"About the drainage of the ordinary Bengali village. It is dug out of the common rice-field level of the country. Holes are left owing to the mud floors and walls of huts having been taken from them; tanks are dug also, and when the road has been worn below mean level, it is repaired with earth taken from excavations made alongside, which leave hollows and ditches of irregular width and depth, rarely connected with each other so as to form one continuous drain. Now these tanks, cesspits, hollows, and ditches are the drainage reservoirs of the village, and as their deepest parts are below the levels of the fields around, they cannot be thoroughly drained away."

* See Sanitary Commissioner for Bengal's No. 7268 of the 23rd of September 1879, to the Secretary to Government, Financial (Sanitary) Department, paragraphs 17 and 18.

43. "Near Damarhuda there is an old loop of the Matabhanga, which runs past Joyrampore and rejoins the river near the village of Roghonathpore. This loop or bend was a main stream many years ago. The Damarhuda end of this old bed has silted up for about half a mile, and the lower end is closed by a bund, to keep out the floods and enable the land to be cultivated. The result is that the water in this loop is not renewed from year to year, and so has become unwholesome. The people have presented a petition asking that a sluice-gate may be erected at Roghonathpore, so that water may be let in or out as desired. This would, no doubt, be a great improvement; but as the outlet has been closed by a bund made by the ryots themselves for their own advantage, this is a work which we think should be undertaken at the cost of those who benefit by the bund.

Section (V).

44. "In the fifth tract, the eastern half, which is similar in character to Section (IV), suffered most severely from fever in 1880, but less in 1881; whilst in the western half, which is generally higher than the rest of Nuddea, the fever has not been very severe in either year. The only road on which we found insufficient waterway was the road between Chogdah and Bongong. The obstruction to drainage was not excessive, but some culverts were undoubtedly required, and these we arranged to have constructed at once. This was the only work, the project for which was sufficiently advanced before we left Nuddea to admit of our sanctioning the expenditure of money on it with safety. There are no embankments in this tract.

45. "Applications were made for the opening of the Jaboona river, which formerly left the Hooghly near Kancharapara, and after a tortuous course of about 30 miles fell into the Ichâmâti, near Goala ferry. An examination made by the Irrigation Branch of the Public Works Department in 1875 showed that the bed of this khal was about 10 feet above low-water level in the Hooghly, and after this enquiry the idea of attempting to open it was abandoned. The Jaboona was undoubtedly once a larger river, but, like the other dead rivers referred to above, it has fulfilled the purpose of its existence, and is gradually disappearing. Any attempt to open it would involve the outlay of a very considerable sum, and would, there seems every probability, end in failure.

46. "As may be gathered from what has been said above, the general result of our investigations shows, that there is very little obstruction to local drainage caused by the roads and railways in the district of Nuddea, and that such obstructions, as do exist, are not of serious importance except on the rare occurrence of unusually severe floods. Further we have found that on most roads where drainage was obstructed in times past, bridges and culverts have been gradually provided, or breaches have been made to allow the floods to pass, whilst roads recently made have generally adequate waterway, so that there is now absolutely less obstruction to drainage than at any previous time within the last 20 or 30 years. In the tract between the Ichâmâti and the lower Matabhanga and Hooghly, in which the fever was severe in 1880, the slight obstructions on the Bongong road were the only ones we found in the entire tract, whilst in the tract between the Bhagiruthee and Jellinghi, which suffered most severely in 1881, we were unable to find any obstruction at all. These facts, we submit, speak for themselves, and conclusively negative the theory that local obstructions to drainage on roads and railways have been an important factor in causing the epidemic. We would further urge that in an extensive district like Nuddea, covering nearly 3,500 square miles, and traversed by several large rivers, it would be impossible for a few local obstructions to cause such a widespread outbreak of fever.

47. "There is one point in regard to the construction and repair of raised roads that requires notice, namely, the practice of raising and repairing the embankment by earth taken from deep cuttings on each side of the road, which cuttings are gradually made deeper and deeper from time to time, until they become unsightly holes filled with stagnant water for the greater part of the year. What is required is to take such a width of land as

will admit of the road being made without digging trenches deeper than two feet, and these cuttings should be afterwards ploughed in and cultivated. For future repairs cuttings should not be made more than one foot in depth, and they should from time to time be ploughed in. Where deep trenches already exist, they should be connected together where practicable, so as to admit of their drainage as far as possible.

48. "The water-supply in Nuddea is of the worst possible quality. Except the rivers taking off from the Ganges, viz., the Bhagiruttee, Jellinghi, Matabhanga, and Gorai with their off-shoots, and few baors, there is no good water in the district.

Impure and deficient water-supply.

49. "*Tanks.*—The tanks are generally small, more or less silted up, and often choked with weeds. As a rule, in and near villages their banks are broken, and they in consequence receive surface drainage while houses are in many places built near the edge of the water into which they directly drain. The water is thick and foul, greenish or brownish in colour, and contaminated with animal and vegetable debris, sometimes also full of animal life, and completely covered with floating vegetation. Many old tanks have so silted up that they contain no water.

50. "The old native custom of digging tanks for the general good seems to be dying out, as the former Deputy Magistrate of Bongong observes:—"The old class of men who used to dig tanks, sometimes for the benefit of the public, but chiefly for the good of their own souls, are gone. They have been succeeded by a generation who lack their faith, but are ignorant of the sanitary code of modern civilization. The consequence is that most of the old tanks are in ruins and overgrown with noxious vegetation, and the number of new ones is very small." The people seem, as a rule, to look to the zemindars for the excavation of tanks, and if this is their duty, they do not perform it. In fact during our tour we saw only one new tank being dug.

51. "The embankment of the rivers for protection from floods has also had a bad effect by preventing the tanks being annually replenished by a good supply of river water.

52. "The other usual causes of the deterioration of tank water were everywhere at work, such as admission of village drainage, bathing, washing of clothes, general defecation on the banks, planting trees and bamboos round them, the leaves of which falling into the water quickly rot, whilst their branches prevent the access of light and air, useful in the oxidation of animal and vegetable matter.

53. "We have done what we could to induce the people to clean their tanks, to use filters, and to adopt other precautions, but with scant success. The influence that an itinerant commission such as ours can exercise over the ignorant villagers is but slight, though they, as a rule, are fully alive to the want of good tanks, and in many instances are ready to make the necessary improvements at their own ultimate expense. Inability to raise the money stands in their way. Some labourers might be ready to assist by giving a few days' gratuitous labour as their quota, but it must be borne in mind that the bulk of the villagers do not understand earth-cutting, and would have to pay their subscription for the hire of labour in money or kind. But they have no capital; their only chance to obtain it is on loan, with the condition of repayment by easy instalments at small interest. As the zemindars in many instances are unable, and still more frequently are unwilling, to advance the money, though ready enough to stand security for its repayment by the villagers interested, we recommended the Collector to apply to Government for permission to make advances, to private persons or communities for the purpose of digging new or restoring old tanks. We are not aware what action has been taken in the matter.

54. "A condition of the loan should be that those tanks be made the property of the village community under the control of the punchayets, and should not belong to the zemindars, who might let them out for fishing, &c., to the detriment of the water-supply. The punchayets being residents have an equal and immediate interest with the people in preserving the purity of the water, which an absentee landlord has not.

55. "In all cases where loans are made, the Collector should carefully look to the position of the tanks proposed to be dug, and have those intended for drinking purposes placed out side the villages. Constant care will have to be taken to see that the banks towards the village are kept in good repair to prevent the entrance of village drainage, and that no trees or jungle are allowed to be planted or grown on the banks. In every village (and in every large *parah* if possible) one tank should be set apart for drinking alone, and no bathing or washing of pots should be permitted in it. These are obvious precautions, but we repeat them, having found that they are constantly disregarded.

56. "*Dead rivers.*—A very large, perhaps the largest, part of the water-supply of the district is from dead rivers, and nothing can be worse than their condition. Corpses are freely thrown into them as long as there is sufficient water to cover the dead body. In many parts of the district no pretence of cremation was observed, and burning their dead among the lower classes of Hindus is evidently not now the custom. Near Meherpore, on the Bhyrub, just above the municipality, where a fishing weir had created a pool, a peculiar oily scum, very evidently of animal origin, was plentiful, clearly betokening that many corpses had been thrown there, while all along the course of this stream there was further evidence of the practice. Near Akundaberia the lake that is now the source of the Cobaduck was manifestly a favourite spot for this immersion of corpses, for dozens of turtles came swimming to where we happened

Casting of corpses.

to stop to converse with the villagers, evidently mistaking our gathering for a funeral party, and so expecting to obtain a meal.

57. "Nothing can be more horrible or more dangerous than this practice of throwing the bodies of the dead—many perhaps victims of contagious disease—into the drinking water-supply of the survivors. At all costs it should be prevented. The extracts appended from communications received from Baboo Shama Charan Chatterjea and other inhabitants of Durgapur show that the more intelligent natives are fully alive to the danger, but the mass of the people are utterly careless and thoughtless. At a place called Bara Saloosh the villagers took credit to themselves for throwing their dead into the Mysore stream below their village, but only smiled when it was pointed out that this stream, a mile lower down, flowed past Kaloopole and supplied its inhabitants with water.

58. "The custom has long existed, but in this time of excessive mortality and sickness it has enormously increased, probably owing to the survivors being unfitted by ill health or prevented by poverty from obtaining sufficient fuel. The scarcity of fuel is, no doubt, the great obstacle to proper cremation; forests and jungles have long since disappeared, and the sole supply available is derived from the village lands. The amount belonging to each village is insufficient in ordinary years, and therefore cannot possibly meet the demand of periods of sickness. The difficulty is further complicated in some places by private rights in existing burning ghâts, which add greatly to the cost of cremation. Altogether the question is so involved that we confess that after careful thought we are unable to suggest any really satisfactory solution.

Fishing weirs and bunds for cultivation.

59. "The current in these dead rivers is very sluggish, and the surface of the water is frequently covered by acquatic plants, chiefly *panna*, a floating weed found everywhere in Nuddea. These plants would ordinarily exercise a cleansing action on the water if allowed to float away with the current when their work is done. But unfortunately, besides natural, there are many artificial obstructions Everywhere we have met with large fishing weirs, built from bank to bank, with perhaps a small opening at either side to allow boats to pass. These weirs are permanent during the greater part of the year, and are so contrived as to stop all but the very smallest fish. Their mischievous action is obvious; not only is the slow progress of the current retarded and scour prevented, but all matter floating on or suspended in the water is stopped, collects near, and, for some way above these weirs, rots and falls to the bottom. The water is rendered foul by such decomposition, and the channel of the stream is permanently injured. A shallow is formed by these deposits, the bed of the river silts up year by year, until a running stream is transformed into a stagnant marsh.

60. "The Unjonah khal, whose foul condition is alleged to have caused so much fever near the town of Kishnaghur, is a notable example. These traps still exist there, and until they are removed altogether, or their number very considerably reduced, there can be no hope of improvement.

61. "The Ichamati and other streams in Bongong near the sub-divisional head-quarters are gradually being injured by similar contrivances. In 1878 the sub-divisional officer, being alive to the impending danger, ordered their wholesale removal; but his decision was upset in the High Court, the obstructions were allowed to remain and even increase, and notwithstanding the remarks made in paragraph 3 of the Government Resolution of the 17th May 1881, nothing has since been done to stop the practice. The district officer seems to have considered the order of the High Court as establishing the indefeasible right of the "julkur" holder to erect fixed engines, but in our opinion the order of the sub-divisional officer was quashed on account of irregularities of procedure, and not on the merits of the question. As we consider these obstructions most deleterious, and likely to cause much damage to the future water-supply from these rivers (to say nothing of the impediments they offer to free navigation), we beg to append a copy of the High Court's order, [not printed] with a recommendation that the question should, if possible, be re-opened.

"Kamors."

62. "Another most objectionable custom of a similar nature is the introduction of large collections of green boughs and branches known as Kamors into the water (particularly of bhils and baors) for the purpose of attracting and sheltering fish, at a time, too, when the water is subsiding. Many complaints were made against this mode of fishing, and with reason. The water of the Bhatahi, on whose banks for several miles there are situated large villages, has been completely spoilt in its upper reaches: these green boughs not only rot but cause increased growth of water-weeds and propagate worms of various kinds—all fatal to the purity of the water. Of late, particularly in the Bongong sub-division, the immersion of "Kamors" has been greatly on the increase, probably owing to the failure of the sub-divisional officer's test case. If the supply of good and pure water is to be maintained, fishermen must be made to return to legitimate fishing with nets and other innocuous means.

63. "In the shallower and shallowing portions of streams, the work of deterioration is similarly hastened by the construction of earthen bunds for cultivation and fishing purposes.

Steeping jute, &c.

64. "The steeping of jute, hemp, bamboos, &c., is constantly practised, and is very objectionable. Some of the smaller bhils are thus completely ruined. In Durgapore, near Kishengunge, where

NOTE.—Dr. Lidderdale desires to record that in his opinion land suitable for the creation of fuel reserves is plentiful in Rajshahye, near Godagari, on the Ganges, in the Bhurind country, already partly under jungle, and that it might be just possible to utilize this for the production of a cheaper fuel supply to those parts of Nuddea connected by water carriage with the Ganges.

there had been an extremely heavy fever mortality, the only insanitary conditions which were specially observed were a very large accumulation of cowdung in the goalpara,* and jute-steeping in the water holes in the village and in a bhil to the westward, from which the people of one parah draw water, though most of the villagers took water from the Matabhanga.

65. "*Springs and wells.*—The water in the dead rivers after the rainy season is entirely supplied by percolation from the country through which they pass, and in the beds of some rivers the water was found forcing itself upwards in strong bubbling springs, bringing with it fine sand. Small wells dug in such situations would give good and pure supplies, but the people seem never to have availed themselves of these, as they said the holes filled up again so quickly. They should be encouraged to use them more freely.

66. "Other wells are common throughout Nuddea, but the water is never drunk if any other can be obtained. It is chiefly used for cleansing cooking pots and other household purposes. The people dislike it very much, saying that it disagrees with them, and has an unpleasant taste. Considering that the wells are sunk in the foul soil of the village, sometimes within a few feet of graves, it is not wonderful that the water should be bad. There is a cess-pool, and in larger places a well privy, often in the immediate vicinity, from which percolation must take place directly into the well. Many wells are not dug sufficiently deep, and dry up in the hot season, when the people are reduced to great straits for water.

67. "*Baors.*—There are also a few fine baors or lakes apparently parts of old river beds (chiefly in the eastern half of the district) and numerous bhils; water from the smaller ones is of bad quality, yet it is universally used.

68. "*General insanitary condition of villages.*—We have dwelt at some length on this subject of the water-supply in Nuddea, as many of its conditions are peculiar to that district. But, besides the deficiency and impurity of the drinking water, we found still prevalent in the villages themselves every insanitary defect that former observers had noted—defects that are more or less common throughout Bengal. The bad condition of the land on which villages are built is brought about by the mode of construction of houses and the habits of the people.

69. "In a country with a heavy annual rainfall and subject to inundation, houses must be well raised. Earth is used for this purpose and a homestead or "bhita" thrown up, and on top of this the house is built with a plinth of mud. This necessitates the digging of an adjacent hole, often very deep and always undrained One homestead having been formed in the manner above given, another and another is added without arrangement of any kind generally crowded together until the whole village is honeycombed with such holes. These receive every sort of household refuse, and nearly all the year round contain water of the foulest description. The water in them is often so well retained that in Asowri, for example, we found from actual levels that in March it was only about six feet below the general surface of the village.

70. "The roads are mere tracks, passing irregularly among the houses, and are often six or eight feet below the level of the foundations, so that they serve as drains, and remain wet and muddy long after the rainy season has passed. To obtain earth to raise or repair them more holes or disconnected ditches are dug which hold water, and are much used for steeping bamboos and jute.

71. "Tanks of various sizes and depths are scattered about the village. As the people go to draw water and bathe, parts of the protecting banks wear away to such an extent that the drainage from the roads passes through them into the tanks. In this way these reservoirs become shallow and foul in a very few years. In some of the better arranged villages there is a tank to each parah, placed just outside the village, but not sufficiently removed to ensure purity or freedom from village drainage when the banks are breached.

72. "Well or surface privies are erected in many a homestead without a thought or a care as to how they are ever to be cleaned; while from want of latrines or particular localities set apart for the deposit of household and other filth and refuse, the roads and open grounds, especially the edges of tanks, are fouled with the grosser forms of pollution. In the village of Alikdeah, near Chooadanga, we found it almost impossible to get down to the water in one of the tanks, its banks both outside and inside were so covered with filth; yet the water of this tank was being drunk. The mortality in this village was enormous.

73. "*Cattle-dung.*—Cattle-dung is, as a rule, never removed outside the village. A little is used in the cultivation of sugarcane and tobacco, and some for fuel, but not sufficient to make any appreciable difference in the cleanliness of the village. Cow-houses are generally placed with their backs to the road, and out of little windows the cowdung is thrown by hand. A heap is thus formed, gradually getting larger and larger, till it spills over into the road, where it is ground into dust by the hoofs of cattle and washed away by the rains into tanks and holes. It is again dug out of the holes, and even used in restoring or building walls. A house was found in a village in Gangni thana which had actually been built on an old cowdung heap, a section of the foundation clearly displaying its nature.

74. "*Diminished fertility of the soil in Nuddea.*—There is a consensus of opinion among Europeans and natives that, except in the lower lands used for the rice crop (amun dhan) reaped in the cold weather, there is a distinct decrease in the fertility of the soil of Nuddea. Considering that no land except that used for sugarcane and tobacco is ever manured, and that the Ganges floods which are so fertilizing are shut out by the embankment of the rivers, it is not to be wondered that gradually the soil should become partially exhausted.

* Goalpara is the part of a village where cowherds live.

Yet tons of the finest manure in the shape of cowdung are available in every village, but this supply, which, if utilized by the cultivators, would restore the fertility to their lands, is not only wasted, but allowed to degenerate into a positive insanitary evil.

75. "*Intra-village interment.*—'In the Mahomedan quarters of the villages the dead are constantly buried on the very borders of the tanks, and under even the doorsteps of the houses. Here and there cemeteries are to be found, but even in those places where they exist they are not exclusively resorted to. Graves may be seen scattered about in every direction, and these graves are seldom made sufficiently deep to ensure the people against poisonous exhalations from the interred bodies. In fact, the bodies lie so near the surface that sometimes, as is well known, they are disinterred by jackals and dogs.'

See Fever Commission Report of 1861.

76. "In many villages, particularly those surrounded by low lands, it is difficult to find outside their precincts any waste land sufficiently above water in the rainy season to admit of corpses being buried to the necessary depth without the graves partially filling with water, hence the burial-grounds are often situated in the very heart of the village itself.

77. "*Shade.*—Shade is necessary to health and comfort in tropical climates; it is therefore to be expected that trees would be freely grown in villages, more particularly those that yield fruit. Their growth should be encouraged, as they assist in purifying and taking moisture from the soil; but the people, from a desire for privacy, permit undergrowth to spring up and flourish all round their houses to such an extent that the ventilation of the village is greatly obstructed and foul air detained. They themselves often complained of the number of bamboo clumps grown, and considered them noxious. A thick matted covering of low jungle shielding the earth from the purifying influences of sun and air is injurious, and keeps the village site damp almost throughout the year, whilst the sheltered places thereby afforded for easement add to the bad effects.

78. "*Overcrowding.*—In the villages of Nuddea human beings and animals live in the closest proximity, and overcrowding at nights is general in the huts. Five or six persons often sleep huddled together for warmth on the floor in a hut so small that there is no room for a proper machan. As these huts, being built of mud, are almost devoid of ventilation, and are closed at night, the air before morning must become much vitiated and must add to the provocatives of fever.

79. "*Clothing of the people.*—The people seem, as a rule, to be badly supplied with clothing. This conduces not only to acute inflammatory attacks, but is very favourable to fever.

80. "*Diet.*—The diet of the lower classes is of inferior quality. Rice with a small supply of poor watery vegetables or dhall and a little salt is their daily fare. Fish is scarce in many places.

81. "Many petitions were received from villagers asking for assistance towards the excavation of their tanks; in most cases the people were ready to take loans, as mentioned in paragraph 53. In none did we consider the excavation of a tank such a work of urgent necessity as to bring it within the category of works on which we should have been justified in spending any portion of the Rs. 50,000 placed at our disposal.

Petitions.

82. "Besides the application for the drainage of the Chuchukhola bhil through the Sarsatti khal, already referred to in paragraph 33, similar applications were forwarded to us from villages near Oosmanpore in Baluka thana of Kooshtea and Bairampore in Bongongs But as they were not received until some time after we had left these sub-divisions, we were unable to visit the places in person. Mr. Anderson, the Sub-divisional Officer of Kooshtea, made minute local enquiries into the subject-matter of the first of these petitions, and his conclusions coincide with those which we formed in the matter of the Chuchukhola bhil, that these works are not of great importance from a sanitary point of view, but that the real object of the applicants was to obtain the rich bottom lands for cultivation. The matter is, however, being dealt with by the local civil authorities under Act VI (B.C.) of 1880.

83. "Other subjects on which we have received petitions have been alluded to in the body of our report.

84. "In many places we had the opportunity of meeting deputations of the more influential inhabitants, while two meetings of special importance were held at Kishnaghur and Chooadanga. At the former the question of opening the Unjonah khal was in particular discussed, while at the latter the want of proper Mahomedan burial-grounds having been pointed out, Munshis Nasimadin, Keyamadin, and other resident jotedars most generously agreed to present the necessary land. Information and advice was everywhere offered. No opportunity was lost of impressing upon the villagers the advantages of filtering water; and in order to afford them a practical illustration, Mr. Tayler, the Magistrate, ordered a three-gurrah filter to be put up at every thana, and its use and construction explained to the chowkidars on their weekly visit. We found, indeed, that some villagers were accustomed to purify water by plunging a red-hot iron into it, or even by boiling, and these practices we recommended them to continue; others, again, used alum; but usually no precaution whatever is taken.

Action of the Commission.

85. "The advantage of sleeping on machans was strongly urged, but their use is not the custom, nor is it likely that the people will improve in this respect. Apart from the fact that the smallness of the huts renders their adoption difficult, the villagers themselves

object that in their present want of warm clothing and wrappers it is more comfortable to sleep on the floor than on machans unprovided with proper bedding.

86. "Relief of the fever-striken was under the control of the Medical Department, and Government, at our recommendation, supplemented this by the liberal distribution of cinchona febrifuge to many native practitioners.

Works of urgent necessity.

87. "As we have shown above, in our opinion the outbreak of fever cannot be attributed to local obstruction to drainage from want of waterway in roads or railways, nor can it be shown that the silting up of old channels or creeks has been the immediate cause.

Summary.

88. "If it were within the range of practicable expenditure to thoroughly drain away the surface water by a system of arterial drainage laid out by professional agency and supplemented by village drains, good might result; but disconnected attempts to drain particular localities should be carefully watched, as much injury might be done thereby to adjacent places.

89. "With the exception of the Bongong road, mentioned in paragraph 44, we found that there was no work on which there could be immediate expenditure. We further considered that the excavation of tanks had better be left to the village communities themselves, aided by tuccavi loans. Thus a very large balance of the Rs. 50,000 placed at our disposal still remains unallotted. We would recommend that it be laid out on the scheme for opening the Nuddea-Bhyrub, together with any further sum which may be necessary to supplement local subscriptions.

90. "The opening of the Unjonah khal has, we understand, been already provided for.

91. "The Kolinga khal scheme, if feasible, might be undertaken by the District Board, supplemented by local subscriptions.

92. "The advantages to follow from the opening of the Nabogunga, Cobaduck, &c., would be undoubtedly so great that if Government does not consider the enquiry of 1876-77 conclusive, we would recommend, notwithstanding our own opinion expressed in paragraph 38, that the matter should be further professionally enquired into.

93. "A list of the roads examined by the Commission on which additional waterway is required is appended, with the amount of waterway necessary, so far as the visit of the Commission enabled them to determine.

94. "We have dwelt at length on the various insanitary conditions found in the villages, and have no doubt as to their very injurious action upon the general health of the people. How far they have caused or even influenced this outbreak of fever is more a matter of medical science than one to be decided by a mixed commission; but the opinion of the Sanitary Commissioner will be found in appendix B. In any case, the defects we have pointed out should be remedied. All of them are within the immediate power of the people themselves to remove. Under the guidance of Mr. Taylor and his subordinates, a few villagers have tried to improve their condition by clearing jungle, forming burial-grounds outside the villages, raising subscriptions for the improvement of the roads and drains, and in other ways; but very much more remains to be done: more power must be given to District Committees, such as is contemplated in the Bengal Government's letter No. 9212, dated 8th April 1882. We, however, feel that it is sufficient for us to call attention to these sanitary defects, and to leave it to the experience of the Magistrates and Committees to frame such bye-laws concerning them as may meet the peculiarities of their respective charges."

Sd. R. Lidderdale, M.D., *President.*
,, A. W. Paul, } *Members.*
,, T. W. Wickes, }

APPENDIX A.

Statement of additional waterway required on the roads in Nuddea inspected by the Fever Commission, so far as their visit enabled them to judge.

Name of road.	Additional waterway required.
Narainpur to Ramnuggur ...	A sluice is required at Fullia; probably two openings 5′ × 6′ would be sufficient. The road would have to be raised near the sluice, and a short channel cut from the 'Sota' or stream outside the road to the khal inside it.
Meherpur to Chooadanga ...	Fifteenth mile.—Bridge over the Kazla nullah, consisting of three openings of 20 feet; waterway sufficient, except when embankments burst. If the Akubpore bund is removed, this bridge will have to be enlarged or taken down, and a ferry substituted. Twelfth mile.—Some 15 or 20 feet additional waterway seem requisite. Sixth mile.—A flood escape of about three openings of 20 feet required near the bridge over

Name of road.	Additional waterway required.
	the Bymaree khal; the road was breached here in 1879. Fifth mile.—A six-feet culvert is necessary near Balaipore factory. Fourth mile.—A six-feet culvert is required near Alickdecah, close to the third mile-post. Third mile.—Another five-feet opening is probably wanted. Second mile.—some 20 or 30 feet of waterway should be provided near the second culvert in this mile.
Durgapur to Halsha (railway station).	An eight-feet culvert is required just outside Durgapur. Beyond Magoorah a khal is bunded, and a four-feet sluice is necessary. About one mile from Halsha, a six-feet culvert is required. About half a mile from Halsha, there is a ten-feet opening; it is sufficient, and an additonal 10 feet of waterway should be given.
Poradaha to Damookdea State Railway.	Second mile.—A bridge is required over the Burral khal, which has been closed by the railway embankment. Fifth mile.—A bridge ought to be provided over a khal that has been similarly closed in this mile. Eighth mile.—There is a small flood opening which ought to be enlarged. At present, stone ballast has to be thrown in to protect it from scour. Tenth mile.—There is another khal closed by the embankment, which should be bridged. Eleventh mile.—There is a small flood opening which should be enlarged; stone ballast has had to be thrown in to stop scour. At Damookdea there is a triangle for reversing purposes; it is of course embanked by the line on all three sides, and the only opening is a two-feet culvert at the highest end; a small culvert should be constructed at the lowest point.
Chooadanga to Sindreeah ...	Fourth mile.—A four-feet culvert is required near the fourth mile-post. Sixth mile.—Fifteen-feet of waterway ought to be provided where a six-feet culvert was carried away in 1871. Seventh mile.—A four-feet culvert is required about halfway between the sixth mile-post and the first culvert. Tenth mile.—A three-feet culvert is necessary.
From seventh mile of Chooadanga road to Kalapole and Karagola.	A three-feet culvert is required where the road turns at right angles before entering Kalapole.
Karagola to Ramnuggur ...	The waterway is insufficient throughout. The number and size of the additional openings that are needed could not be fixed from a casual inspection.
Kissengunge to Kotchandpore	Ninteenth mile.—A six-feet culvert is wanted where the road crosses a bhil. Fourteenth mile.—A six-feet culvert is necessary near the end of the mile, also a twelve-feet opening in the village of Jeebnuggur. Twelfth mile.—A four-feet culvert should be provided near the end of this mile, close to a tank. Seventh mile.—A fifteen-feet opening is necessary where the road breached in 1871. Sixth mile.—Another eight-feet opening is required at the commencement of the mile, near an existing five-feet culvert; also a four-feet culvert a few chains further on. Fifth mile.—An eight-feet culvert is necessary just before entering Baziopore village.
Hansadaha to Moheshpore ...	About two miles along the road from Hansadaha, a ten-feet flat opening is required where there is now a breach. Three small culverts are wanted near Begumpore, and between it and Moochetolla.
Moheshpore to Chowgachee ...	Two culverts (say four feet each) are required in the second mile. Between Khan Beeley and Goatully, a four-feet culvert is wanted. Within the next two miles three culverts are necessary. Ten feet more waterway is required for the bridge about three miles from Chowgachee. A culvert is wanted a few chains before reaching the Tengur bridge.
Chowgachee to Gopalnuggur	A mile beyond Khatgara a breach has been filled in; a culvert is necessary there. Another culvert is required at a breach two miles from Khatgara.
Bagdha to Garapotta ...	A three-feet culvert is wanted near Boinchakhallee, and two more three-feet culverts not far beyond that village.
Cross-road from the above to Bagoola station.	At the commencement of the road some breaches were being filled in, where waterway ought to have been provided. The extent of waterway required could not be determined.

APPENDIX B.

Note on the type of Fever.

"An enquiry into the nature of this fever was undertaken by officers of the Sanitary Department in the season of 1880, and there was no clashing of opinion concerning it. All recognized it as a malarious fever, such as is usual in Bengal during and after the rainy season, but of a very virulent kind. The Civil Surgeon of Nuddea, after two seasons' experience, speaks of it as "an ague intermittent, characterized by relapses, which in the majority of cases terminated in splenic enlargement followed by anæmia, and in prolonged cases splenic dropsy terminating in diarrhœa and death." Extreme emaciation was also often seen among the sufferers, depending upon almost complete loss of the power of digesting food.

"The fever does not differ from that described by Dr. Elliot, after enquiry in 1863, and accords with descriptions of the disease as seen in Hooghly and Burdwan during the great outbreaks in these districts.

"It has, however, some very characteristic features, making it as something apart from ordinary marsh malarious fever, viz., its virulence, its incidence in, and absence from neighbouring places, its mode of progression over the face of a country, its extreme tendency to relapse, and its difficulty to treat successfully, except without long periods of medication.

"Its virulence has been so great as to have led several careful observers, such as Dr. Elliot, Dr. Jackson, and Dr. Sutherland, to believe that it was contagious fever in the same sense as scarlet fever or small-pox is contagious. Noticing how it travelled along lines of communication, taking years at times to progress across a district—how it stuck to houses till, in many instances, nearly every inhabitant had been removed by death—how offensive the smell proceeding from the bodies of the sufferers was,—it is not surprising that this opinion of its contagious nature should have arisen, and be still held by numerous native medical men. One of the oldest and most experienced practitioners in Kishnaghur, Baboo Kali Kumar Lahori, who has seen the fever since its first appearance, believes it to be contagious, and has much to advance in favour of his opinion.

"With the light of later pathological observations, the progress in elucidating causes of disease afforded by the germ theory, and especially the cultivation of Anthrax virus of various degrees of virulence by Pasteur, it seems unnecessary to consider the fever as a contagious one. It is obvious that it requires many favouring circumstances, especially those of locality, to originate or reproduce an outbreak, and Dr. Jackson remarks that "it is intensified in old, effete, decaying, rotting places, saturated with organic debris, and that a fever, originally malarious, acquired either in Jessore or Nuddea contagious properties." Further, he says "that in the large crowded towns of western Nuddea, Oolah for instance, a still further elaboration of poison and accession of intensity occurred." That this last view is correct seems to agree with very high scientific opinion that diseases long known may, with favouring circumstances, appear in much more general and fatal forms. Pasteur has shown this with regard to the disease called Pebrine, among silkworms. The sudden and unaccountable appearance of great flights of insects passing over and devastating countries—the appearance generally of a plant which before was only noticeable by a few specimens—all assist us in reasoning that germs which in ordinary conditions are in normal number, may, under very similar, but more suitable conditions, spring up in unusual numbers and strength. Professor Tyndall writes: "Though epidemic disease requires a special contagion to produce it, surrounding conditions must have a potent influence on its development...... ....Looked at, therefore, from the point of view of the germ theory, the exceptional energy which epidemic disease from time to time exhibits is in harmony with the method of nature."

"His experiments, too, on the sterilization of liquids proved fully that the measures sufficient for complete sterilization in 1875 were quite inefficient in 1876, "in consequence of increased vitality or virulence in the contagia afloat." Following the germ theory, therefore, we may reasonably conclude that the fever which has done such havoc in Nuddea, as in many other districts of Lower Bengal, is nothing but the ordinary fever of the Gangetic delta, whose germs, by specially favouring conditions, have so intensified as to cause a very virulent and fatal disease.

"The history of cholera is a similar one. Originally looked upon as a mild endemic disease, it appeared in 1817 in Jessore in epidemic form of extreme fatality, which has been its characteristic ever since. It has acquired intensity not only in its natural home, but strength to travel all over the world.

"Dr. Sternberg, when considering the question of the occasional acquisition of virulent qualities by micro-organisms, writes:—

'The fact observed by myself, that during the summer months the mud in the gutters of New Orleans possesses an extraordinary degree of virulence, shows that pathogenic varieties of bacteria are not alone bred in the bodies of living animals. The more I study the subject, the more probable it seems to me that in this direction lies the explanation of many problems, which have puzzled epidemiologists, and that the sanitarians are right in fighting against filth as a prime factor in the production of epidemics, a factor of which the *rôle* is easily understood if this view is correct.'

"The germ theory applied to the explanation of malarious fever has numerous objectors. Lately Professors Klebs and Tommasi-Crudeli have announced the discovery of a Bacillus Malariæ in the soil of the Agro-Romano and in the blood of persons suffering from intermittent fever. M. Laveran, another investigator, found parasitic organisms, very definite in form, and most remarkable in character, in the blood of patients suffering from malarious poison.

"Dr. Oldham, however, a writer on Indian fever, has failed to find the Bacillus, and he has inoculated himself and others, and dogs with the blood of fever patients without producing the disease.

"Dr. Roy records: 'I have examined about 30 specimens of blood of fever patients in all stages of illness, and I must confess that I have not noticed any of those crescent-shaped bodies of Laveran or Bacillus Malaria of Huxley. Some small spherical-shaped bodies were discovered either clustered together round blood corpuscles, or separate, having a clear centre, and about quarter the size of a blood corpuscle. These belonged to the class of micrococci, but inasmuch as their presence was constant in all specimens of blood of fever and fever-free patients, I am inclined to look upon the admixture as accidental from the air. The microscope used in these experiments had a magnifying power of 500 diameters.'

"Dr. Sternberg, whose investigations into the etiology of the malarial fevers are published in the annual report of the National Board of Health, United States, 1881, shows reasons for the belief that a fallacy is involved in the celebrated experiments of the Italian observers, still negative evidence is not conclusive that there is no germ which produces malarial fever. We know that matter can be so finely divided as to be quite invisible under the highest powers of the microscope, and only at present discoverable and demonstrable by the electric beam. We are therefore not entitled to say that there is no germ, because it has not yet been satisfactorily demonstrated under the microscope, or, because intermittent fever exists in both dry and marshy countries, jump to the conclusion that its origin is chill. Reasoning from analogy, and using the germ theory, much is satisfactorily explained. For instance, treating the cause of the fever as an intensified malarious germ, which originated in certain highly favourable insanitary conditions, we can understand that, when transmitted from once place to another where the conditions are similar, it will grow and flourish. It requires a Mahomedpore, Srinuggur, or Oolah to bring it to full vigour, in the same sense as overcrowding is favourable to typhus poison, and, once reared, it can be carried from place to place. It accords with the history of the disease that it is removed from village to village, and if mushroom spawn can be imported from Europe to India, why should not the virus of this disease be carried in the soil on a bullock's hoof or a cart wheel? An instance, and a very marked one, of introduction has been given by Baboo Shyama Charan Chatterjea, a medical practitioner residing in Gosain Durgapur, a village on the left bank of the Pangasi. He reports: "During last year before the general outbreak of fever at Durgapur, a few people went to Belgachi to dine with a relative. They came back and got the fever. Since then the whole village was violently overtaken with the disease, which gradually assumed an obstinate and fatal type. Special centres of disease, such as Belgachi and Nagarbanka, should be carefully looked after. Any village where the usual factors of disease lie in a dormant state is much likely to catch the infection from a neighbouring place by means of human intercourse. We do not mean to say that these fevers are strictly communicable from man to man, but that the disease germ from an infected spot acts much like a ferment in an already predisposed neighbouring place. Such was the case at Durgapur. These centres of infection are in fact the *fons et origo mali*—the hot-beds of fever germs."

"Following this mode of reasoning, it is easy to explain many of the facts which have been considered stumbling-blocks in its way before. In a memorial from the zemindars, talookdars, and traders of Hooghly and Burdwan, presented in March 1869 to the Lieutenant-Governor of Bengal, they say: "But they have at the same time remarked that many low and jungly villages in which the people drink water from stagnant pools are not at all affected by the epidemic, while several villages situated on high land, and having broad roads and good drinking water tanks, have been the hot-beds of epidemic mortality." Again "it (the epidemic) is shown to have been unaccountably capricious and fitful in its incidence, seizing indiscriminately on towns whose sanitary arrangements are the best, and others where sanitation was quite neglected, and entirely overleaping tracts which there was every reason to suppose most liable to its attacks."

"The explanation is easy if we supposed that all that is required is the introduction of a virulent fever germ, carried by human intercourse chiefly. All villages and towns in Bengal are sodden with animal excrement, no matter whether they are situated on the old alluvion or the new in Burdwan or Bankoora, in Nuddea or in Moorshedabad, or Beerbhoom, and the only element apparently wanting for the creation of an outbreak of this fever in them is the presence of its own special germ.

"If they are unable to originate this type of the disease, they at any rate possess all the conditions necessary for its prevalence."

(Signed). R. Lidderdale, M.D.,

Sanitary Commissioner for Bengal.

APPENDIX C.

POLLUTION OF RIVER WATER.

Extract from notes on the probable causes of the increase of fever in and about Gosain Durgapur, by Baboo Shyama Charan Chatterjea, B.A., M.B.

"THE pollution of the only source of wholesome water is, we humbly beg to suggest, opposed to all laws, social, religious, and moral. It is a matter deeply to be regretted that the lower classes of the people have gradually got into the bad habit of throwing their dead bodies into the river water without being in any way checked. No argument is necessary to condemn such an objectionable practice. It should at once be put down by legislative measures. Our *Shastras* strictly enjoin that the dead bodies of men and beasts should not under any circumstance whatever be cast into the river. "If a Hindu (*Joogis* and *Boiragees* excepted) throws the remains of his deceased relative into the river in an unburnt state, he shall lose his caste, and not be allowed to perform the *sradh* and other religious rites for the benefit of the deceased's soul. Only children under two years of age are to be buried in the earth." So says our wise forefathers and social legislators. Annexure A contains verses from the texts of Manu, Bramhopuran, Smirtha, and Jagannauth Tarkopunchanun, as collated by Pundit Sreenath Sironioni of Durgapur. Such a consensus of opinion bearing the authority of even Manu himself deserves the respectful consideration of every enlightened government. All these high authorities unanimously declare that the contamination of drinking water by throwing dead bodies into it should be strictly interdicted under penalty of forfeiture of caste. Our countrymen cannot, in consonance with the injunctions of their own *Shastras*, raise the voice of opposition if Government should consider it worth its while to interdict this hateful practice. Some may say that such interdiction by legal measures would press rather heavily upon the poorer classes of Hindus Of course Mahomedans are altogether out of question. My only answer to such objection would be that the proposed legislation would be entirely in keeping with the teachings of our *Shastras* and the laws of sanitary science. It is a laudable custom among our well-to-do countrymen, specially in villages, that whenever a poor Hindu requests them for a supply of fuel wood to burn his deceased relatives, they immediately and unhesitatingly comply with the poor man's request. The very poorest people, who cannot afford to pay for the trifle of a funeral expense, have this resource to fall back upon to enable them to discharge their last debt to dead humanity. It is therefore to be reasonably expected that Government will not permit them to persist in a course of malpractice based upon an act of sacrilege, and opposed to the simplest rules of hygiene and common-sense."

ANNEXURE A.

Translation of Sanskrit passages.

"THERE are three different rites which should be performed in reference to a deceased person. They are thus referred to in the Suddhikáriká :—"There is the preliminary rite, the intermediate rite, and the subsequent rite. The preliminary rite is described as one which commences with cremation, &c., and ends with the offering of the *pindas* (funeral cakes)." It appears from texts like these that without cremation no right accrues to the intermediate and subsequent rites, inasmuch as he alone who has had his preliminary rite performed is entitled to the subsequent one. Hence it follows that the purificatory rite of cremation is required by all. But an objection may arise as to what is to be done with children who have not completed their second year, as cremation in their case is prohibited by the verse that "cremation should be performed to males and females alike above the age of two years." This objection is futile, since burial in the ground is provided by Yajnyavalkya in the verse "those who are under two years of age should be buried, and no libation of water is to be poured for them." From the principle that the meaning of the *Shastras* determined in one place is to be adopted in other places if there be nothing to the contrary, burial in the ground is adopted in the cases of Jugis and Vaishnabs; and from the same principle it follows that those who have no cremation should be buried in the ground.

"The water of tanks, &c., gets defiled by contact with dead bodies. Thus the Brahma Purana :—"The bodies of those animals whose meat should not be used for food defile the water of tanks, wells, and reservoirs by coming in contact therewith." Bodies means carcasses, because in the next verse the word *kunapa* or carcase is used."

APPENDIX No. IV.

REPORT ON THE EXPERIMENTAL ESTABLISHMENT OF BOVINE VACCINATION IN CALCUTTA.

First Report on Animal Vaccination in Calcutta, by Dr. K. P. Gupta, Superintendent of Vaccination, Metropolitan Circles, dated the 25th April 1883.

The Government having resolved to introduce Animal Vaccination into Calcutta, the Sanitary Commissioner desired me to send one of my first grade Deputy Superintendents to see and study the methods pursued in Bombay. Assistant Surgeon, Ram Soonder Ghose, Rai Bahadoor, readily volunteered to go, for which he deserves great credit. He left Calcutta on 1st November and reached Bombay on the 5th idem, where he studied all the procedure of calf vaccination for three weeks. He returned to Calcutta early in December and brought with him calf lymph in capillary tubes, as well as some straps for securing calves, and forceps for pressing out lymph from the vesicles.

The first calf was vaccinated on 29th January with the lymph brought from Bombay by Baboo Ram Soonder Ghose, and on the 7th day the result was seen to be very successful. Another calf was vaccinated from the first calf in the presence of the Officiating Sanitary Commissioner, Dr. DeFabeck. From the first the lymph has been transmitted to 19 calves up to 21st March, and it was therefore the 18th transmission, and with the exception of one very lean calf all proved successful.

Lymph was generally used direct from the calf to vaccinate all applicants at the depôt, and surplus lymph was stored in tubes and distributed, of which an account will be given further on. I have seen the results of several cases done with calf lymph, and nothing could be better The fact of the opening of a depôt for vaccination direct from the calf having been advertised in the newspapers, the number of applications increased considerably. Every day a number of ladies and gentlemen and others came to the depôt to have themselves vaccinated. Some came from the mofussil. I vaccinated His Honor the Lieutenant-Governor and household as well as Mr. and Mrs. Bernard with calf lymph. These were re-vaccinations, and with a single exception all proved successful. As was expected, the demand for calf lymph by Europeans and Eurasians was far greater than by natives, among whom only a few educated and enlightened persons have come forward to take vaccination direct from the calf. The table in the margin shows the particulars of cases mostly vaccinated at the depôt and a few at their homes with calf lymph.

	Total number vaccinated.	Primary.				Re-vaccination.			
		Total.	Successful.	Unsuccessful including doubtful.	Unknown.	Total.	Successful.	Unsuccessful including doubtful.	Unknown.
At the depôt...	340	214	162	18	34	126	54	45	27

Note.—For further details, *see* table appended to this Report.

Besides the above number, 183 (115 primary and 68 secondary) cases were vaccinated by the town vaccinators, of which 98 are reported to have been successful. The use of lymph stored in tubes is attended with difficulty and sometimes uncertainty. There are vaccinators who are very skilful in vaccinating with humanized virus, but they cannot use tube lymph with success. Again, all tubes are not properly filled, and hence the occasional disappointment with the use of tube lymph. Either of these two causes is sufficient to account for the few failures reported above. There is a third cause of failure which I can only hint at, and that is the unwillingness and reluctance of orthdox Hindu vaccinators to use calf lymph, and hence they wish that the experiment might not succeed. They would not touch the calf; so to accommodate their prejudices I have arranged that lymph would be squeezed out and given to them to vaccinate from. It is to be hoped that the vaccinators will get over these prejudices. Dr. McLeod having given orders to his men to use calf lymph largely, a calf is now regularly sent to the College Hospital, Municipal Office, and Park Street depôts for use of the vaccinators, and the people don't object. It has been again and again brought to notice that the difficulty of procuring vaccinifers willing to give lymph is increasing every year, and in calf lymph we have got the requisite remedy. From one calf we can vaccinate from two to three hundred persons daily, so that if any epidemic of small-pox threaten Calcutta, we can easily raise lymph to vaccinate any number of people and meet the largest demand.

Supply of tube lymph.—As all lymph direct from the calf was not used up, the surplus was stored up in capillary tubes and distributed. From 10th March an account of the supplies has been kept. It shows that 120 tubes were sent to the Sanitary Commissioner's office for distribution, 56 to the Deputy Superintendent in Town, 36 to the Deputy Superintendent of the Suburbs, 24 to Jung Bahadoor, of Nepal, 12 to Dr. King, Superintendent of the Botanical Gardens, Civil Surgeons of Dacca and Furreedpore, 4 each; 12 to the Native Doctor of Alipore jail, and 4 to Dr. Rudduck, Assam. Success has been reported by the Civil Surgeons of Dacca and Furreedpore, the Deputy Superintendents of Town and Suburbs, Native Doctor of the Alipore jail; no report from the rest.

The system has been quite a success, and the demand for calf lymph is very great. Every morning some applicants come to the depôt and have themselves vaccinated. Calves are now regularly sent out to the depôts and to private residences of gentlemen applying for them.

Experiments and observations.—The calves that were vaccinated all got fever on the 6th or 8th day, as shown by their temperature which went up to from 101° to 103°, and also by their hair being ruffled and more or less erect. By-and-bye experiments will be tried to find out whether vaccination with calf lymph is as protective as that from humanized virus, and their results will be afterwards reported.

Expenditure.—Up to 31st March Rs. 1,347-3-6 has been expended. This includes the pay of Assistant Surgeon R. S. Ghose, at Rs. 200, for one month and 18 days, and of Assistant Surgeon J. M. Bhuttacharjee, at Rs. 50, for four days, and at Rs. 100 for 25 days of March 1883. As I have not got the results of all cases done with the calf lymph, the average cost of each successful case cannot be given. But, considering the large number of tubes distributed and the large number done at the different depôts and houses with the calf, and taking the cases shown in the tabular statement given in this report, the cost of each case will be very moderate. The cost of advertisements has been great.

Statement showing particulars of Animal Vaccination during the months of February and March 1883.

Number of Vaccinators.	Total number of persons vaccinated.			Primary Vaccination.														Re-vaccination.														Percentage of successful cases.	
				Sex.		Caste.				Age of total primarily vaccinated.				Results.				Sex.		Caste.				Age of total re-vaccinated.				Results.			
	Males.	Females.	Total.	Males.	Females.	Christians.	Hindus.	Mahomedans.	Other races.	Under one year.	One year and under 6.	Six years and above.	Total at *all* ages.	Successful.	Unsuccessful, including those "doubtful."	Unknown.	Total.	Males.	Females.	Christians.	Hindus.	Mahomedans.	Other races.	Under one year.	One year and under 6.	Six years and above.	Total at *all* ages.	Successful.	Unsuccessful, including those "doubtful."	Unknown.	Total.	In primary vaccination.	In secondary vaccination.
3	30	18	48	24	18	1	34	7	...	18	21	3	42	42	...	...	42	0	.	2	4	.	...	...	...	6	6	8	3	...	6	100·	50·
3	164	128	292	97	75	23	82	67	..	55	82	35	172	120	18	34	172	67	53	78	30	12	...	...	12	108	120	51	42	27	120	69·77	42·50
6	194	146	340	121	95	24	116	74	..	73	103	38	214	162	18	34	214	73	53	80	34	12	...	..	12	114	126	54	45	27	126	52·94	54·54
...	...	...	183	...	..	...	...	...	.	..	...	...	115	98	17	..	115	.	...	...	...	...	...	...	...	...	68	...	68	...	68	85·22	....

Temperature of Calves after vaccination.

Natural temperature of an unvaccinated calf 100·6.

Number of Calves.	Date.	Hour.	Day.	Temperature.	Number of Calves.	Date.	Hour.	Day.	Temperature.
Calf No. 17 ...	30th March ...	8 A.M. ...	6th day ...	101·6	Calf No. 19 ...	4th April ...	7 A.M. ...	5th day ...	101
Ditto ...	31st " ...	Do. ...	7th " ...	101	Ditto 18 ...	" " ...	4 P.M. ...	6th " ...	101·2
Ditto ...	" " ...	4 P.M. ...	" " ...	100	Ditto 19 ...	" " ...	Do. ...	5th " ...	101
Ditto ...	1st April ...	7 A.M. ...	8th " ...	101	Ditto 18 ...	5th " ...	7 A.M. ...	7th " ...	100·6
Ditto ...	2nd " ...	Do. .	9th " ...	101	Ditto 19 ...	" " ...	Do. ...	6th " ...	100·6
Ditto 18 ...	" " ...	Do. ...	4th " ...	102·4	Ditto 18 ...	" " ...	4 P.M. ...	7th " ...	103·2
Ditto ...	3rd " ...	Do. . .	5th " ...	102·4	Ditto 19 ...	" " ...	Do. ...	6th " ...	103·4
Ditto 19 ...	" " ...	Do. .	4th " ...	101·8	Ditto 18 ...	6th " ...	7 A.M. ...	8th " ...	101·4
Ditto 18 ..	" " ...	4 P.M. ...	5th " ...	102·6	Ditto 19 ...	" " ...	Do. ...	7th " ...	101
Ditto ...	4th " ...	7 A.M. ...	6th " ...	100·8					

APPENDIX No. V.

SUMMARY OF SANITARY WORKS, IMPROVEMENTS, &c., CARRIED OUT IN TOWNS AND DISTRICTS

DURING THE YEAR 1882.

Summary of Sanitary Works, Improvements, &c., which were carried out in Towns and Districts during the year 1882.

CONSERVANCY.

In Towns.

Latrines.

Public latrines and urinals were constructed in the following Municipalities:—

Towns.	Districts.	Number with Remarks.
Ranigunge	Burdwan	3.
Bankura	Bankura	1 in kutcherry compound, 1 in Idga mohulla, and 1 kutcha latrine in place of trench latrines which were attempted, but failed, as the people would not resort to them.
Tumlook	Midnapore	1 (in progress).
Bhudresur	Hughli	1.
Serampore	Serampore	1 latrine and 2 urinals, the latter by the side of the Grand Trunk Road.
Boidyabatti	Ditto	1 at Seraputti.
Howrah	Howrah	For the courts and police.
Suburbs of Calcutta	24-Pergunnahs	15 sanctioned, and application for acquiring land for them submitted to Government.
Kishnaghur	Nuddea	2.
Jessore	Jessore	Number not mentioned.
Lalbagh	Murshidabad	3.
Murshidabad	Ditto	3.
Kandi	Ditto	Number not mentioned (in progress).
Dinagepore	Dinagepore	1 near the kutcherry.
Beauleah	Rajshahye	1 at Durgapore and temporary ones on the churs.
Nattore	Ditto	2.
Bogra	Bogra	2 for males and 1 for females, and 1 in the kutcherry compound.
Kurseong	Darjiling	1 completed and 1 in progress.
Darjiling	Ditto	1 below the Chourasta and 2 in Bhootia busti.
Julpaiguri	Julpaiguri	2.
Naraingunge	Dacca	5.
Goalundo	Faridpore	Number not stated.
Barisal	Backergunge	1 near Road Cess Office compound and 1 near Abhoy Babu's house.
Brahmanbariah	Tipperah	4.
Patna	Patna	4 and several Ramsay's portable latrines.
Behar	Patna	3.
Barh	Do.	Some Ramsay's portable latrines.
Futwa	Do.	Ditto ditto.
Arrah	Shahabad	1 near jail, one for females constructed and four more to be built in crowded parts of the town.
Madhubani	Durbhanga	6.
Durbhanga	Ditto	2 in progress, and 56 were to be constructed, making with the existing ones 100 in all.
Revilgunge	Sarun	Male and female latrines for pilgrims during Godna fair.
Chupra	Do.	3 (two with compartments for males and females and one temporary for persons attending the opium kutcherry). Additions were also made to the kutcherry latrine.
Jamalpore	Monghyr	3.
Monghyr	Do.	1 tattee latrine at Kowra maidan.
Bhagulpore	Bhagulpore	10 pucca, mat, and Ramsay's portable latrines.
Purneah	Purneah	14 (seven for males and seven for females).
Cuttack	Cuttack	3, of which one consists of tattee.
Purulia	Manbhum	2 with boundary pillars to latrine compound.

Carts, bullocks, &c.

Conservancy and night-soil carts, with bullocks, &c., for the more efficient carrying out of the conservancy arrangements, were provided in the undermentioned Municipalities:—

Towns.	Districts.	Nature of Work.
Ranigunge	Burdwan	1 Conservancy cart.
Tumlook	Midnapore	2 Ditto.
Kishnaghur	Nuddea	Conservancy carts.
Santipore	Ditto	3 Ditto.
Pubna	Pubna	1 Night-soil and three conservancy carts.
Serajgunge	Do.	2 Ditto carts.
Naraingunge	Dacca	8 Ditto and three street sweepings carts, and nine bullocks and buffaloes.
Dacca	Do.	Additional conservancy carts and bullocks number not stated.
Brahmanbariah	Tipperah	1 Night-soil cart.
Chittagong	Chittagong	Conservancy carts: number not stated.
Roserah	Durbhanga	1 Night-soil cart.
Durbhanga	Ditto	6 Ditto and street sweepings carts.

Towns.		Districts.		Nature of Works.
Bhagulpore	...	Bhagulporo	...	Conservancy carts: number not stated.
Purneah	...	Purneah	...	Night-soil carts, buckets, tools, &c.: do.
Sahebgunge	...	Southal Pergunnahs	...	1 conservancy cart.
Cuttack	...	Cuttack ...	...	Conservancy carts and 12 bullocks.
Poori	...	Poori. ...	...	12 night-soil carts in three wards: six more to be provided in remaining three wards before close of year.

Establishment.

The establishment was strengthened in the following Municipalities, in order that conservancy &c., may be more fully and efficiently attended to:—

Towns.		Districts.		Establishments.
Ranigunge	...	Burdwan	...	Sweepers: number not stated.
Tumlook	...	Midnapore ...	...	2 mehters.
Naraingunge	...	Dacca ...	...	10 mehters procured from Cawnpore.
Dacca ...	...	Do. ...	...	2 inspectors for conservancy and roads, and arrangements made to employ 100 additional mehters
Behar	...	Patna ...	...	6 sweepers.
Chuprah	...	Sarun ...	...	3 ditto.
Sahebgunge	...	Sonthal Pergunnahs	...	Conservancy establishment: strength not stated.
Poori ...	...	Poori ...	...	Sweepers: number not stated.

Buildings.

Under the head of Buildings constructed for conservancy purposes, may be mentioned a hut for sweepers and a shed for night-soil carts in the *Serampore* Municipality; a shed for the reception of dead animals in *Boidyabatti* in Serampore; stables for conservancy cattle in *Kishnaghur* in Nuddea; huts for mehters and domes in *Beauleah* in Rajshahye and *Naraingunge* in Dacca; two guard houses and two other houses, and land for public latrines in *Brahmanbariah* in Tipperah; depôts for the reception of night-soil in *Gya*; three plots of land acquired for trenching night-soil in *Durbhanga*; shed for storing night-soil at Nyagong, in *Jumalpore* in Monghyr; and a shed for carts and bullocks in *Maldah*.

Trenching night-soil.

The system of burying night-soil in trenches was established or extended in the municipalities of *Kishnaghur* in Nuddea; of *Murshidabad; of Nattore* in Rajshahye; of *Serajgunge* in Pubna; of *Darjiling* (old sites within the station abandoned and new ones below Victoria Road, sufficiently removed from dwellings, taken up); of *Brahmanbariah* in Tipperah; of *Durbhanga*, where one manured trenching ground was leased out for cultivation; of *Purneah;* and of *Poori*, in each of the six wards into which the town is divided.

General sanitary improvements.

Not the least important of the sanitary measures carried out during the year were the following:—

In the *Suburbs of Calcutta* five important bustees—Sitaram, Bindabun, Cossie, Ghasee and Malie—were reclaimed and improved at a cost of Rs. 13,001, the improvements consisting in the ground having been levelled, broad roads constructed, good tanks provided, drainage improved, houses removed and rebuilt in systematic order, arrangement made for the construction of future buildings in regular lines only, &c. The same was done with regard to certain bustees in *Howrah*, where some excellent rules, referring to position, ventilation, conservancy and drainage, were framed, to be observed when constructing new huts. The *Khoolna* station, which is to be the head quarters of the new district of that name, was being laid out, for which purpose a large plot of ground was acquired, and the present courts, which are mat structures, are to be replaced by masonry buildings. At the *Tikaree* Union in Gya, surveys have been made with the view of laying out the town and clearing out a space in its centre for a square—a small park. In this work the Maharani of the place evinced special interest. Commendable general improvements were effected in the *Purneah* and *Poori* Municipalities. In the former surface cleansings were thoroughly attended to, and, with the view of introducing the Latrine Act in the bazaars and more densely populated parts of the town, night-soil carts, buckets, tools, &c., were purchased, rules for regulating the duties of nightmen framed, and every preparation made for commencing the scheme at a cost of Rs. 2,822-11-3; but the measure had to be postponed for want of mehters, who were not procurable. The latter was divided into six wards for the better supervision of conservancy, the mehter staff was increased, night-soil carts purchased and brought into use, trenching grounds opened in each ward, better arrangements adopted for the disposal of the night-soil, and burial grounds established. Similarly in the *Chittagong* Municipality, whose former insanitary condition was a standing reproach, rank jungle was cleared, and surface cleansings and general conservancy were more closely attended to. In the *Dacca* Municipality a very commendable beginning was made in filling up the many "gors"—the receptacles for generations of sewage and the contents of the privies which literally line their borders. One large and two small ones were filled up, and two others were being similarly treated. Many of the well-privies, which seriously contaminate the water-supply in many parts of this town, were closed. The well-privies in the *Chupra* town were also similarly dealt with. In the *Naraingunge* Municipality great improvements were being effected consequent on the construction of the Dacca and Manickgunge Railway, the terminus of which will be here. New land was, therefore, being

raised and reclaimed, bazaars cleared away, and new roads made. In the *Berhampore* town a large number of obnoxious pits were filled up, notably one called the Kadai, which, owing to its extensive dimensions and great depth, was a prolific source of unhealthiness. Similar action was taken with some of the hollows in the *Beauleah*, *Pubna* and *Roserah* Municipalities. In the *Monghyr* Municipality a beginning was made in removing night-soil and waste water from the private privies by the municipal mehters without the intervention of the law on the subject, and the scheme, it is said, promises to be successful. In the *Rungpore* Municipality a garden for the cultivation of English vegetables was established on a trenching ground that had been manured, and the produce was freely sold to the public, thus supplying an important article of diet not raised by private enterprize. In the *Durbhanga* town the inhabitants were induced to adopt mud walls and tiled roofs in the construction of their houses. Two-thirds of the houses that had straw roofs and walls were thus improved.

DRAINAGE.

In towns.

General drainage schemes carried out.

The great-drainage scheme in the *Lalbagh* Municipality in the Murshidabad district, which was referred to in the Report for 1881, was almost completed by the close of this year. All that remained was turfing, and the provision of subsidiary drains which had not been considered before, but which had been commenced. The cost of this work amounts to Rs. 32,917, including Rs. 4,000, the estimated cost of the subsidiary drains. The Magistrate, however, doubts whether this scheme will work efficiently. The *Rungpore* Municipality drainage scheme was also completed, but it is said that it is difficult to maintain a thoroughly efficient outfall, as the main outlets are nine miles in length and silt forms in them annually. A great deal of the silt was, however, removed during this year. The land reclaimed by the scheme has been acquired, and, when it is occupied and cultivated, will probably yield a revenue with which the channels may be kept in efficient repair. In the *Darjiling* Municipality the Locknagor Jhora drain was improved and lengthened considerably, and the following drains were constructed, viz. one from the Bengal Secretariat to Standford House; one along a portion of the Meadow Bank Road; one from Mrs. Haughton's House on the Auckland Road, through the Cooch Behar State; one along a portion of the Victoria Road to receive the drainage of the Botanical Gardens; and one along a portion of Jeetun Jhora to drain the public road leading from the bazaar to the jail. The drainage scheme of the *Gya* Municipality was proceeded with, the Khojapi pyne series of drains having been completed, and the Kathokhur nullah series and the Madragunge nullah series, the former carrying off the drainage of the new, and the latter that of the old town, having been nearly completed. In the *Durbhanga* Municipality sluice gates were provided to the mouths of the drainage channels into which the drains of the town run, and which convey the overflow of the Bagmutti and Kumla rivers. In the *Bhagulpore* Municipality channels were constructed for draining off all surplus water to the low lands in the Mudehpoora sub-division beyond the station. In the *Purneah* Municipality the drainage of the old station, which is water-logged by the Ganges and Darjiling road, has been taken in hand, the Executive Engineer having been requested to open a culvert and to have a drainage scheme devised. In the *Maldah* Municipality the drainage was improved by arrangements having been made for flushing the sewage through the large open drains with a good fall away from houses, so that the inhabited portions of the town may be kept dry and well-drained. In the *Cuttack* and *Poori* Municipalities the drainage schemes, which were in hand last year, were further advanced. In the *Hazaribagh* Municipality a pucca drain was constructed, and the sloping of the main drain with the construction of kutcha side-drains was taken in hand. The latter work is stated to be important, as, when completed, the rain-water will flow away more readily through the main drain, which passes through the centre of the town, and the accumulation of foul water be prevented.

Drainage schemes in hand.

Systemized drainage schemes have been inaugurated in the *Culna* Municipality in the Burdwan district; in *Serampore*; in *Soori* in Birbhum; in *Azimgunge* and *Berhampore*; in Murshidabad; in *Tumlook* in Midnapore; and in *Soojagunge* in Bhagulpore.

Other drainage measures.

The drainage works, other than those mentioned above, which were undertaken during the year, may be classified as follows:—

New drains.

New drains, with the necessary culverts, pipes, bridges, &c., were provided in the following Municipalities.—

Towns.	Districts.	Towns.	Districts.
Bankura	Bankura.	Mohespore and Kishnaghur	Nuddea.
Midnapore	Midnapore.	Kandi and Lalbagh ...	Murshidabad.
Hugli, Shambazar, Jehanabad, Bali and Khanakool	Hughli.	Nattore	Rajshahye.
Ooterparah ...	Serampore.	Rungpore	Rungpore.
Joynugger, Naihati, Bussirhat, and Suburbs of Calcutta ...	24-Pergunnahs.	Pubna	Pubna.
		Darjiling	Darjiling.
		Naraingunge ...	Dacca.
		Patna	Patna.

Towns.	Districts.	Towns.	Districts.
Jehanabad	Gya.	Jamalpore	Monghyr.
Bhaboðah, Nasrigunge, and Jugdispore ...	Shahabad.	Bhagulpore ...	Bhagulpore.
Hajipore and Mahnar...	Mozufferpore.	Maldah and English Bazar	Maldah.
Durbhanga ...	Durbhanga.	Sahebgunge and Deoghur	Sonthal Pergunnahs.
Revilgunge and Chupra	Sarun.	Chatra and Hazaribagh	Hazaribagh.

Alterations, &c., to drainage.

Alterations, &c., calculated to improve the drainage generally or specially, such as providing culverts, pipes, sluices, protecting walls, &c., re-excavating, rectifying levels and removing obstructions from the drains, carrying out extensions, &c, were effected in the following Municipalities:—

Towns.	Districts.	Towns.	Districts.
		Bograh and Sherpore ...	Bograh.
Tumlook	Midnapore.	Pubna	Pubna.
Bhudresur ...	Hughli.	Goalundo	Faridpore.
Howrah	Howrah.	Tangail, Sherepore and Muktagacha ...	Mymensing.
Baranagore, South Suburban, Rajpore, Barriepore, North Dum-Dum and North and South Barrackpore ...	24-Pergunnahs.	Bramanbariah ...	Tipperah.
		Behar	Patna.
		Gya, Daoodnuggur and Aurungabad ...	Gya.
Santipore	Nuddea.	Sitamurhi and Madhubuni	Mozufferpore.
Satkhera	Khoolna.	Godda	Sonthal Pergunnahs.
Bettiah	Chumparun.	Ranchi and Gharwa ...	Lohardugga.
Monghyr	Monghyr.	Chyebassa	Singbhum.
Colgong	Bhagulpore.		
Purneah	Purneah.		

In Districts.

Drainage works carried out in Districts.

Surveys were being made and levels taken for re-opening the old Gogra river in the *Burdwan* district. The drainage and irrigation channel on the side of the second range of the Hidglee tidal canal, in the Tumlook sub-division in *Midnapore*, was cleared of silt by the Public Works Department. The sluice gate at Satpooker in Diamond Harbour in the *24-Pergunnahs*, which had been swept away, was being reconstructed. *Nuddea.*—A good deal was done for the drainage of this fever-stricken district. Culverts were provided to four roads in the Kooshtea sub-division, and to the Chooadanga and Jhenidah road. The culverts on the latter road removed two serious obstructions to drainage, and benefited large tracts of country embraced in the four large villages of Ghosami, Boonapara, Shahapore and Doshomi. Culverts were also constructed for the drainage of six roads in the Sudder sub-division and five in the Bongong sub-division. Bridges and drains on the sides of the Chogdah and Bongong road in the last-named sub-division were also in progress. These will be finished in another six months, and are calculated to improve the sanitary condition of a large tract of land, measuring on the average 20 miles in length and about a mile in width. A drain was excavated at village Dukhinpara, in the Sudder sub-division. Survey and levels were taken along some 10 miles of the river Bhoirub in the Meherpore sub-division, with a view to providing it with a new embouchure. The result was not favourable. A large tract of low land, locally known by the name of Choonchakhola bheel, in the same sub-division, was surveyed, and a scheme for its thorough drainage is under preparation. Six miles of the Goorgooriah nullah in thanah Nakashipara, in the Sudder sub-division, was surveyed. The result was the discovery that the mouth of this nullah can be opened; but, as the undertaking will be very expensive, it has, for the present, been kept in abeyance. The whole town of Chooadanga was surveyed and a scheme for efficiently draining it, at an estimated cost of Rs. 2,500, has been sanctioned. In the *Murshidabad* district a cut was made at Farashdangah to drain the Kaligunge bheel, and two existing drainage cuts, about 8½ miles in length, for draining the town of Berhampore and the low lands and bheels between it and the Gobra nullah, were thoroughly cleared and repaired. The railway authorities in the *Dinagepore* district cut a channel at Parbuttipore with the view of draining some foul tanks; the main drainage canal was cleared of silt; culverts were put up on different roads; and the embankment for the new line of Railway from Parbuttipore to Dinagepore was completed. In the *Backergunge* district 10 khals were opened out, and a culvert on the Bikua road was constructed. In *Chumparun* the Railway embankment was completed. In the *Maldah* district much attention was bestowed on many villages embraced within a radius of 10 miles of head-quarters, and and lying for the most part on the west of the river Mohanuddi, and in the Chanchal Estate, by metalling the roads, cutting side drains, and removing jungle; and channels were excavated for the drainage of large tracts of country for agricultural extensions, for improving habitations, for providing water for drinking purposes, for improving communications by boat, and for increasing the volume of water in certain channels, thereby tending to check malarious exhalations in their neighbourhood.

By private individuals.

In the *Tumlook* sub-division in the *Madaripore* district the zemindars in Tumlook and Moisadal cleared the silt from a good number of drainage and irrigation khals; and in the *Madaripore* municipality in *Faridpore*, the zemindars of Narail and Babu Kali Krishna filled up two very large ditches.

ROADS.

In Towns.

New roads with the necessary appliances for securing drainage, water-way, &c., were constructed, or were in progress of construction, and existing roads were extended or widened, in the under-mentioned towns:—

Towns.	Districts.
Bishenpore	Bankura.
Patroshair	
Chundrakona	Midnapore.
Midnapore	
Khanakool	Hughli.
Hughli	
Jehanabad	
Shambazar	
South Suburban	24-Pergunnahs.
Joynuggur	
Busirhat	
Itanda	
Chagdah	Nuddea.
Ranaghat	
Santipore	
Meherpore	
Kooshtea	
Lalbagh	Murshidabad.
Kandi	
Satkhera	Khoolna.
Chanduria	
Nattore	Rajshahye.
Bogra	Bogra.
Serajgunge	Pubna.
Julpaiguri	Julpaiguri.
Madaripore	Faridpore.
Goalundo	
Backergunge	Backergunge.
Bowful	
Nulchitti	
Muktagachi	Mymensing.
Bazitpore	
Brahmanbariah	Tipperah.
Cox's Bazar	Chittagong.
Sudharam	Noakholli.
Patna	Patna.
Behar	
Hajipore	Mozufferpore.
Mozufferpore	
Lalgunge	
Durbhanga	Durbhanga.
Chupra	Sarun.
Bhagulpore	Bhagulpore.
English Bazar	Maldah.
Dumka	Sonthal Pergunnahs.
Pakour	
Kendrapara	Cuttack.
Jajipore	
Cuttack	
Balasore	Balasore.
Hazaribagh	Hazaribagh.
Ranchi	Loharduggа.

The roads in the following Municipalities were newly metalled, or the process was being proceeded with at the close of the year:—

Towns.	Districts.
Hughli	Hughli.
Bhudresur	
Utorparah	Serampore.
Serampore	
Howrah	Howrah.
Suburbs of Calcutta	24-Pergunnahs.
Baranagore	
Joynuggur	
North Dum Dum	
Santipore	Nuddea.
Berhampore	Murshidabad.
Kandi	
Muktagacha	Mymensing.
Jugdispore	Shahabad.
Bhabuah	
Mozufferpore	Mozufferpore.
Durbhanga	Durbhanga.
Madhubani	
Bettiah	Chumparun.
Bhagulpore	Bhagulpore.
Kissengunge	Purneah.
English Bazar	Maldah.
Maldah	
Jajipore	Cuttack.

In Districts.

In the under-mentioned places important roads, whereby the sanitary condition of the villages through which they were laid was greatly improved, were constructed. They were in all cases provided with the necessary culverts, pipes, bridges, &c., for securing adequate water-way:—

Localities.	Districts.	Class of Roads.	Number.	Probable Cost. Rs. A. P.
In Sudder, Ranigunge, Cutwa, and Culna sub-divisions	Burdwan	Village	Not stated	15,174 0 0
In different villages	Bankura	Do.	20	Not stated.
In Sudder Tumlook, Contai and Ghatal sub-divisions, and Moisadal police station	Midnapore	Do.	63	11,810 7 9
In Sudder and Oolooberiah sub-divisions	Howrah	Do.	18	6,271 5 6
From Kooshtea Railway station to Kooshtea Bazar	Nuddea	......	1	Not stated.
In different villages	Jessore	Village	Not stated	17,278 7 8
In Kandi sub-division	Murshidabad	Do.	6	Not stated.
Along Satkhera khal	Khoolna	......	1	Ditto.
From Pateram to Hilli and from Khansama on the Atrai to Northern Bengal State Railway	Dinagepore	......	2	Ditto.
From Rajshahye to Maldah	Rajshahye	......	1	Ditto.
The old famine road from Mohadebpore to Sultanpore converted to a feeder road	Ditto	......	1	10,000 0 0 Government grant.
From Jeypore on the Northern Bengal State Railway to Ketlal and from Hilli to Pateram	Bogra	Village	2	Not stated.

Localities.	Districts.	Class of Roads.	Number.	Probable Cost.
				Rs. A. P.
In Serajgunge sub-division ...	Pubna ...	Village ...	5	1,024 0 0
In different villages ...	Faridpore ...	Do ...	Large number	Not stated.
In different villages ...	Backergunge ...	Do. ...	37	44,906 0 0
In different villages ...	Noakholli ...	Do. ...	Not stated ...	Not stated.
In Indurwa in Sitamurhi sub-division	Mozufferpore ...	Do. ...	1	Ditto.
In different villages	Chumparun ...	Do. ...	Not stated ...	Ditto.
From Bhagulpore overbridge to Sonthal Pergunnahs ...	Bhagulpore ...	......	Ditto ...	Ditto.
The new division road, including planting of trees on the sides of roads, &c.	Purneah ...	......	Ditto ...	36,955 0 0
From Haldipada to Panchparah	Balasore ...	Village ...	Ditto ...	Not stated.

Under the above head may also be noticed the following:—The Railway line from Dalsingserai in *Monghyr*, on the opposite bank of the Ganges, was extended to Semri Ghat, and a steam ferry established to connect this line with the East Indian Railway at Mokamah. The new division line of the Eastern Bengal Railway was constructed in *Faridpore*. This line, it is said, has caused obstruction to the drainage of a portion of the Goalundo sub-division. A tramway was established from Deoghur to Baidyanath junction station in the *Sonthal Pergunnahs*.

WATER-SUPPLY.

In Towns.

Water-supply schemes undertaken.

The scheme for supplying the *Burdwan* town with water from the Damuda, referred to in the Report for 1881, was undertaken this year. The positions of the several buildings were fixed, and the excavation of the water reservoirs and the construction of the connecting culverts commenced. The total estimated cost of the work amounts to Rs. 2,11,000, of which Rs. 50,000 will be paid by the Maharajah of Burdwan, a similar amount by Government, Rs. 1,00,000 will be raised by loan, and Rs. 11,000 obtained by the sale to Government of the municipal sluices at Joojooti. In the *Serampore* town four sluices were put up in different parts of the channels through which the condensed water from the Serampore mills is led so that its flow into different directions according to requirement may be regulated. A bathing ghat, called Mr. Carstairs' bathing ghat, was erected on the banks of the river Hughli near the Serampore College The scheme for supplying the *Howrah* town with water is yet under consideration. The chief points to be determined are: (1) whence the water is to be drawn, *i.e.*, whether from the Surusutti river, as approved by Government, or from the Hughli, as preferred by the Commissioners; (2) how to provide for the cost, and (3) what arrangements are to be made for a sinking fund in order to repay the loan to be raised for the purpose. The scheme for extending the Calcutta water-supply to the *Suburbs* has also not yet been finally determined on, the question under consideration being what share of the cost of the proposal to lay down an iron main pipe, conveying the water from Barrackpore, is to be borne by the Suburban Municipality. In the *Berhampore* town, wells were dug in the dry bed of the Bhagirutti in front of the town, in order to meet the great want of water felt there, in consequence of changes in the bed of the river Ganges at its entrance, by which the supply of water from that river to the Bhagirutti was reduced almost to *nil*. In *Nattore* town, in Rajshahye, channels were cut to admit river water freely into the large moats around the rajbari and into the outer moats. In the *Pubna* town, a pump, the gift of the late Magistrate, Mr W. M. Clay, was put up on the west bank of No. 1 station tank, and an iron cistern was supplied, which has proved a great convenience to the people, and is much used, the neighbouring river Echamutti was bunded, and a large supply of fairly good drinking water retained by this means. This was a very important work since not only are the tanks in the town a questionable source as regards quality, but they are also exposed to constant deficiency in point of quantity. In the *Dacca* town, it was arranged to close all the impure public wells in localities supplied with water from the hydrants. A suggestion by the Civil Surgeon to deal similarly with the private wells in houses in the same localities was negatived by the Commissioners on the ground that it would inflict great hardship on the families of the Mahomedans and Hindus. The proposition was therefore postponed till water can be introduced into their houses, to effect which the raising of a loan of a lac of rupees has been sanctioned. In the *Durbhanga* town, the worst of the stagnant tanks and pools, consisting of 232 dahras or small tanks and 115 pools, hollows, and depressions, were cleared out at the expense of their owners. A scheme for the supply of filtered water to the town of *Bhagulpore* has so far progressed that the first sod on the site of the proposed works was cut by His Honor the Lieutenant-Governor in November last. The Divisional Engineer is preparing the necessary plans and estimates, and there is every prospect of the work being carried to speedy completion. A bund with open stone causeways has been constructed at Buddia in *Godda* in the Sonthal Pergunnahs district, with the view of forming an artificial lake for the supply of water to the neighbouring villages.

Tanks provided in special localities.

New tanks were excavated, and the existing ones either re-excavated, cleared out, or improved, and foul and stagnant ones filled up in the following towns:—

Towns.	Districts.	No.	Remarks.
Culna ...	Burdwan ...	1,	Newly excavated.
Tumlook ...	Midnapore ...	1,	Re-excavated.
Midnapore		1,	Filled up.
Khanakool	Hughli ...	...	Improved.
Serampore	Serampore ...	1, 2,	Re-excavated. Ghats supplied.
Suburbs of Calcutta (Kalighat)	24-Pergunnahs ...	1,	Re-excavated.
Barripore...	Ditto ...	1,	Ghat supplied.
Santipore...	Nuddea ...	10,	Bathing ghats.
Dinagepore	Dinagepore ...	1, 1,	Ghat re-constructed. Set apart for drinking.
Pubna ...	Pubna ...	2, 1,	Newly excavated. Ghat supplied.
Kurseong Darjiling	Darjiling ...	... 2, 1,	Improved. Newly excavated. Watering trough.
Goalundo ..	Faridpore ...	1,	Newly excavated.
Perozepore	Backergunge	1,	Ditto.
Sudharam...	Noakholli ...	1,	Set apart for drinking.
Sitamurhi	Mozufferpore	1,	Reservoir for watering streets.
Durbhanga Roserah ...	Durbhanga...		Not stated.
English Bazar ...	Maldah ...	1,	Newly excavated.
Ranchi ...	Lohardugga	1, Not stated.	Deepened. Set apart.

Wells provided in special localities.

New wells were sunk, or the existing ones were improved generally, &c., in the following towns:—

Towns.	Districts.	No.	Remarks.
Burdwan ...	Burdwan	1	Sunk.
Bankura ...	Bankura	1	Improved.
Meherpore ...	Nuddea	Not stated.	Sunk.
Kishnaghur ...	Ditto	Ditto ...	Do.
Bogra ...	Bogra	1	Do.
Chunari ...	Shahabad	Not stated.	Do.
Jehanabad ...		1	Do.
Durbhanga ...	Durbhanga	8	Do.
Revilgunge ...	Sarun	2	Do.
		1	Do.
		Not stated.	
		1	Kutcha, converted to pucca.
Monghyr ...	Monghyr	1	Sunk.
Jamalpore ...		Not stated.	Pits constructed.
Purneah ...	Purneah	2	Cleared out.
Sahebgunge ...	Sonthal Pergunnahs ...	1	Sunk.
Balasore ...	Balasore	1	Do.
Purulia ...	Manbhum	1	Do.

In Districts.

In *Manbhum* the construction of the embankment and other works connected with the Govindpore Lake are being expedited; and the reports show that tanks and, in a few cases, wells were constructed in the following districts. Those provided by private individuals are distinguished from the others:—

Districts.	Localities.	Number of Tanks or Wells, &c.	Cost.	Names of the Private Individuals at whose cost they were constructed.
			Rs.	
Bankura ...	In different places	1,095 tanks ...	Not stated	......
Midnapore ...	Gurbetta police station	1 tank	250	......
	Rughoonath ,, ...	2 tanks	50	......
	Moisadal ,, ...	1 tank with pucca ghat.	7,100	......
	Sootahatta thanah	1 reclaimed... ...	80	......
	Salbooni police station	1 well	10	......
Hughli	Not stated	7 tanks re-excavated.	2,103	......
Kheolna ...	Village Bagmaria in Magurah thanah.	1 tank	1,100	Kedar Nath Chatterjee.
	Village Bullubpore, in thanah Assasooni.	1 do.	200	Bidya Bewa.
	Attika in Bagirhat thanah ...	1 do.	300	Sreenath Ghosal.
Rajshahye ...	Tana	1 do.	750	....
	Not stated	Several	Not stated	Names not furnished.
	From Nowgaon to Singra for water for villages and traffic.	1 khal	Ditto.	......
Bogra ...	Dhoro, in thanah Bogra	Not stated	1,300	Tara Sundory Gupta.
	Borothoroh, in thanah Khettal ...	Ditto	400	Guru Churn Ghose.
	Udaipur ditto ditto ...	Ditto	250	Nawai Mondul.
	Sukna ditto Panchbibi ...	Ditto	715	Guddadhur Mondul.
	Parulia ditto ditto ...	Ditto	500	Rai Kristo Mondul.
	Kashal ditto Badalgachi...	Ditto	700	Joges Mahomed Mondul.
Pubna ...	Serajgunge sub-division	3 tanks	2,800	Names not mentioned.
Darjiling ...	Siligoree and Khoribari	2 wells	549	......
	Kalimpong, water supply improved	......	......	......
Faridpore ...	In different parts	8 tanks	1,407	......
	At Puramba	1 tank	5,100	Gobindo Chunder Saha.
	,, Boomick	1 do.		Anunda Chunder Bhoomick.
	,, Kholabari	1 do.		Hurruah Chowdhry.
	,, Parampore	1 do.		Bonomalli Datta.
Monghyr ...	In places where the want of water was felt.	Wells, pucca and kutcha; number not stated.	Not stated	......
Purneah ...	Not stated	Tanks and pucca wells, number not stated.	1,912	Villagers; names not mentioned.
Balasore ...	Ditto	9 tanks, 3 wells ...	1,183	Names not mentioned.

DISPOSAL OF THE DEAD.

In Towns.

Burial grounds were established at *Soori* in Birbhum for Christians, and at *Pubna, Serajgunge, Julpaiguri, Dacca, Gya, Chupra, Durbhanga* and *Poori* for Mahomedans. *Burning ghats* were opened out at *Julpaiguri* and *Gya.*

MARKETS AND SLAUGHTER HOUSES.

In Towns.

Markets.

Two meat markets were in course of construction in the *Burdwan* town. Arrangements have been made to improve the Municipal Market in *Serampore* at a cost of Rs. 27,000, to meet which a public loan of Rs. 20,000 has been called for. A fish and general market has been started at *Pubna.* At *Darjiling* a meat market has been erected in front of the wood depôt in place of the old one. At *Gya* a grain market in Sahebgunge near the old jail, and a vegetable market, consisting of 8 tiled sheds, were under construction. At *Revilgunge* in Sarun, a market, called the "Eden Bazar" was opened out. At *Hazaribagh* a market shed has been constructed. At *Purulia* in Manbhum, a range of shops has been erected.

Slaughter houses.

These were constructed at *Arrah* in Shahabad, *Bhagulpore* and *Cuttack*, and a butcher's shop was opened out at *Durbhanga.*

PROTECTION TO TRAVELLERS.

In Towns.

Serais for the accommodation of travellers were constructed at *Burdwan*, and *Bettiah* in Chumparun (by the Maharajah of Bettiah), and additions to existing serais were made at *Chupra* in Sarun and *Purulia* in Manbhum. At *Darjiling* the square of the serai was metalled and its floor cemented.

In Districts.

Two sheds for travellers were erected at *Kalimpong* in Darjiling.

MEDICAL RELIEF.

In Towns.

Dispensaries were constructed at *Barrepore* in the 24-Pergunnahs and *Bettiah* in Chumparun. The Eden Sanitarium in *Darjeeling* for the reception of European patients, under a scale of graduated charges, is approaching completion, and was to have been opened out early in the current year. A thatched house and verandah were added to the dispensary at *Faridpore.* Four sheds at *Barisal* in Backergunge and one in *Sahebgunge* in the Sonthal Pergunnahs were provided for sick paupers. A new dispensary to replace the old one was being built by Mr. Dear of Monghyr. It will be provided with suitable wards for male and female Natives and Europeans and for opthalmic patients. Provision will also be made for insolation of contagious cases, an operating room, &c.

In Districts.

A dispensary was constructed by the Maharajah of Durbhanga on his estate at Parihar, in the *Madhubuni sub-division* in Durbhanga, and a hospital was in course of construction at Moisadal in the *Tumlook sub-division* in Midnapore.

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 20th June 1883.

F. W. A. DEFABECK,
Offg. Sany. Commr. for Bengal.

APPENDIX No. VI.

RULES FOR THE GUIDANCE OF THE OFFICERS OF THE VACCINATION DEPARTMENT, WITH REFERENCE TO THEIR VACCINATION AND SANITARY INSPECTION DUTIES.

Rules for the guidance of the Officers of the Vaccination Department, with reference to their Vaccination and Sanitary Inspection Duties.

In order that due and complete effect may be given to the instructions of Government directing that the officers of the Vaccination Department shall, in addition to their vaccination work, aid the Sanitary Commissioner in all branches of sanitary labour, the following rules are prescribed for observance by Deputy Sanitary Commissioners and their subordinates:—

I.—The Deputy Sanitary Commissioners shall, when inspecting the vaccination work of their subordinates, ascertain the number of operations performed by vaccinators (with due reference to the proportion of population with the number of already protected recorded in their registers), the character and the quality of the operations performed, and the amount and the merits of the work entrusted to Deputy Superintendents and Inspectors of Vaccination of all classes. They shall make it an important point of their duty to carefully ascertain, as far as possible, what number of children were born in the village during the year prior to the time of their visit, and whether they have all been vaccinated or not, and to take steps for having the unprotected vaccinated as speedily as possible. They shall use every reasonable endeavour, by explaining to the members of municipal committees, village headmen, natives of influence and position, and the people generally, the nature, objects, and benefits of vaccination, and by invoking the aid of the civil and police authorities, in cases in which opposition is offered, to promote vaccination by all legitimate means, noting the steps taken in this direction by their subordinates, and the progress made in villages inspected.

II.—They shall also, when visiting a village or town, inquire into its sanitary condition and carefully record any sources of insalubrity affecting the health of the people, together with such remedies as, in consultation with the Civil Surgeon, they may recommend for their mitigation. Their inquiries should be directed towards—

(1) *Topography.*—The situation of the village or town, with reference to its elevation or otherwise above the surrounding country, its proximity to rivers, nullahs, lakes, jheels, or marsh lands; to terai or swampy tracts of rice cultivation; to forests or areas of jungle land; to mountain ranges or high lands from which it is liable to be flooded during heavy rains—and special note should also be made of the character of the soil, its permeability, its capacity for the retention of moisture, and its power of absorbing and radiating heat. Special notes on climate and meteorology may be referred to under this head.

(2) *Population.*—Noting the number of inhabitants in general, as also their proportion in regard to sex and caste; its density with reference to means of accommodation, the habits of the people, and their chief occupations.

(3) *Dwellings.*—Describing their mode of structure, condition, proximity, and arrangements in regard to external perflation and internal ventilation, means of preserving them from ground damp and rain, and their capacity with reference to the numbers inhabiting them; their state of cleanliness, and the means adopted for removal of sewage and refuse. This also includes the housing of cattle.

(4) *Roads and Streets.*—As to their sufficiency for the objects of free perflation and to the condition of their side drains—whether deep, shallow, sufficient in fall, liable to obstruction—and whether they are used as latrines by the inhabitants.

(5) *Water-supply.*—Its sources, quality, and sufficiency, specially noting any probable causes of pollution:—(*a*) If from rivers, that no objectionable circumstances exist above stream to influence the water, no drains falling into them, no washing or bathing ghâts, no tanneries, dye-works, slaughter-houses, and similar sources of pollution; that precautions exist for the exclusion of such operations to the down-stream side, and for the drawing of water for drinking purposes only from above the town or village. (*b*) If from tanks, that a certain and sufficient number be specially isolated for supplying drinking-water, selecting only those likely least to suffer from contaminating causes; that these be specially protected from being used by the inhabitants for any other purpose than that of supplying drinking-water; that their sides be sufficiently raised to prevent any kind of surface drainage flowing into them; that no causes likely to pollute the water through filtration exist anywhere within dangerous distance of them; and that they be protected from falling leaves and other decaying vegetable matter. (*c*) If from wells, that the cone of percolation* be kept perfectly free from any contaminating cause; that no bathing, washing, or filthy habits of any sort be permitted near them; that their mouths be protected from access of accidental animal or vegetable substances; and that their margin be surrounded with an effective parapet to prevent inward drainage.

(6) *Conservancy.*—Including modes adopted for the disposal of sewage and other refuse matters, of dead cattle, offal from slaughter-houses, and similar immundicity, with careful observation of the efficiency or otherwise of public or private latrines.

(7) *Disposal of the dead.*—With reference to position of burial grounds and burning ghats, especially as to their proximity to sources of drinking-water, sufficient capacity of grave-yards, and the custom sometimes prevailing of burying the dead in private enclosures.

(8) *Food.*—In relation to its nature, supply, and quality.

(9) *General health.*—Noting especially any causes which appear injuriously to affect the physique of the population.

Although inspection should always be as searching as possible, it is not intended that full notes embracing all the above details should be recorded in every report submitted to this office. The first report on any place visited, however, should be complete in this respect, and it will be sufficient that reference be made in all subsequent reports to this initial one. Alterations or modifications of any kind which may occur between periods of inspection should always be carefully recorded.

III.—They shall, wherever possible, point out to the people defects in sanitation that obtain in any village or town, and the probable result of such defects on their health; they shall persuade them to rectify those susceptible of individual removal, and to abandon all practices which tend to produce unhealthiness.

IV.—In cases of epidemic or severe prevalence of any disease, they shall, after ascertaining its general history, distribution, duration, severity, and subsidence, the causes, exciting and predisposing, to which it is referable, and how far these causes are traceable to particular local insanitary conditions, specially with regard to conservancy, drainage, water-supply, or any of the conditions before named of the houses or localities in which the disease is present, at once address the local district officers direct on the subject, noting the insanitary conditions to which the disease is referable, and offering such recommendations as they may consider needed for arresting the progress of the disease and correcting the sanitary defects observed. A copy of this representation should, simultaneously, be sent to the Sanitary Commissioner.

V.—Whenever, owing to an undue prevalence of any disease within the limits of the circle of a Deputy Sanitary Commissioner, he is called upon by the Sanitary Commissioner, or by the local district officers, to inquire into the matter, he shall proceed to the locality, investigate the circumstances, and record the facts in regard to the disease in question in the manner prescribed in Rule IV, and submit a report to the Sanitary Commissioner of the results, with recommendations as to the remedial measures that ought, in his opinion, to be adopted. If owing to any *valid* reason the Deputy Sanitary Commissioner is unable to perform this duty himself, he shall depute his Deputy Superintendent of Vaccination to perform it. The Deputy Superintendent's report should be forwarded to the Sanitary Commissioner by the Deputy Sanitary Commissioner with his remarks thereon, and an explanation shewing the cause of the transference of the inquiry.

VI.—The Deputy Sanitary Commissioners and the Deputy Superintendents of Vaccination shall, when visiting a village, ascertain and note carefully the number of births and deaths that have occured in it during the three months prior to the date of visit, the class and sex of the number born, and the class, sex, and age of the deceased. They shall as soon as possible after this, compare the information obtained with the entries in the registers kept up in the thannah, outpost, or registering circle, to which the village is subordinate. In places where the chowkidars keep memorandum books of births and deaths, the entries in them should also be verified by inquiry on the spot. When visiting a municipal town or a circle to which the Compulsory Registration Act IV (B. C.) of 1873, has been extended, they shall ascertain how the law is being worked, and describe its influence on registration.

VII.—They shall, on visiting any town or other area to which either the Compulsory Vaccination Act V (B. C.) of 1880, or the Act IV (B. C.) of 1865, prohibiting inoculation, or both, have been extended, ascertain how these laws have been worked, and how far the former has promoted vaccination and the latter suppressed inoculation.

VIII.—Every officer in the Vaccination Department shall make himself fully acquainted, with the provisions of the Compulsory Vaccination Act V (B.C.) of 1880; of Act IV (B.C.) of 1865, prohibiting inoculation; of Act IV (B.C.) of 1873, rendering the registration of births and deaths compulsory; and of any laws affecting vaccination, inoculation, and the registration of births and deaths, that may hereafter be enacted: and every Inspector of Vaccination and Inspecting or Head Vaccinator shall make himself thoroughly acquainted with the instructions contained in Dr. Cuningham's Sanitary Primer for Indian Schools.

IX.—No person shall be appointed an Inspector of Vaccination or an Inspecting or Head Vaccinator unless he shall have passed a satisfactory examination in elementary hygiene; and all officers of these classes who are now on the staff shall pass a similar examination within six months from the date of notice to this effect, to be given to them at once by the Deputy Sanitary Commissioners. These examinations shall be conducted by the Deputy Sanitary Commissioners, and a report of the results in each case shall be submitted by them to the Sanitary Commissioner. After these officers shall have passed this examination, they shall perform the duties prescribed in Rules 1, 2, 3, 6, and 7.

X.—The Deputy Sanitary Commissioners and the Deputy Superintendents of Vaccination shall keep a Monthly Diary, shewing in full detail the vaccination and sanitary work performed by them under every head prescribed in the foregoing rules. These Diaries should be forwarded to the Sanitary Commissioner as soon as possible after the close of the month to which they relate, the Diaries of the Deputy Superintendents of Vaccination being sent through the Deputy Sanitary Commissioners, with remarks of the latter on the observations, &c., recorded therein. The reports of the Inspectors and Inspecting or Head Vaccinators should be similarly treated.

DIARY OF VACCINATION AND SANITARY WORK PERFORMED BY OF THE CIRCLE DURING THE MONTH OF 188 .

Date of visit.	Names of villages and towns visited.	Districts and thannahs in which the towns and villages are situated.	Population of the villages and towns.	Vaccination work performed, as per Rules 1 and 7.

Sanitary work performed, as per Rules 2, 3, 4, 5, and 6.	Numbers and dates of letters forwarding special reports to the local district officers and to the Sanitary Commissioner.	Remarks.

APPENDIX No. VII.

FURTHER REPORT SHOWING THE RESULTS OF THE ANALYSIS MADE IN DACCA ON DRINKING WATER.

Report on the analysis of drinking water at Dacca, by Dr. A. Crombie, Civil Surgeon of Dacca.

"I forward a letter which I addressed to the Municipal Commissioners, giving the results of the analysis which had been made of the well and hydrant water since July 1881, and I append a tabular statement showing the actual results of each analysis of each water. These show the immense superiority of the river and hydrant water, and the poisonous quality of the well and tank water. With regard to the hydrant water, it is evident that it was not so pure in July and September 1881 as in November, March and April 1882, and that in fact in September 1881 it was not fit for distribution on account of sewage contamination. The cause of this liability to contamination is not far to seek. The bottom of the filtering beds is nine feet below the surface of the ground, and they are so built as to be freely pervious to water. When therefore the sub-soil water (which is only partially diluted sewage in Dacca) rises above nine feet, *i.e.*, from the middle of June to the end of October, it is liable to pass into the filtering beds and so into the reservoir of filtered water. As a result of my letter to the Commissioners, a Municipal Committee, consisting of myself, the Chairman, and the Executive Engineer, was formed to enquire into this leakage. We made an experiment which, showed that when one filter bed was full and the other empty, the sub-soil water outside the full filter bed rose to 5 feet higher than it stood opposite the empty one, showing the most perfect interchange to be possible between the soil and the filter beds. I find that the reservoir of filtered water has now been made waterproof. I however also discovered that the main suction pipe from the river as well as the suction pipe from the settling tank leaked, and they too are therefore capable of sucking in sub-soil water whenever it rises to their level. The report of the Sub-Committee has not yet been submitted, but there is no question of the urgent necessity of taking up the filtering material and making the filtering beds as waterproof as it is now possible to do.

"With regard to the wells, the Municipal Commissioners found it impossible to accept my proposition to close all wells, public and private. This could not be done without introducing hydrant water into every house, and this at present is not practicable. But they agreed to close all public wells in the line of the hydrants, and also to close all cess-pools, both public and private, which is a resolution of very great importance, because the impurity of the well-water is dependent on the innumerable cess-pools generally close to the wells."

Results of Analysis expressed in parts per 100,000.

	Dates.	Total solid matter.	Chlorine.	Free ammonia.	Albuminoid ammonia.	Nitrogen, or nitrates and nitrites.	Previous sewage contamination.	Hardness, Clark's scale. Total hardness.	Temporary.	Permanent.	Nitrates and nitrites.	Behaviour of total solid residue on ignition.	Poisonous or other metals.
River water	9-11-81	10·	·26	·002	·0084	·042	116	4·94	1·4	3·54	Nitrates trace, nitrites none.	No blackening.	None.
Hydrant water ...	30-7-81	7·2	·26	·0026	·0172	·131	1,011	5·35	1·05	4·3	Both present.	Slight blackening.	Do.
	26-9-81	35·0	·62	·0037	·0092	·614	5,850	14·5	9·5	5·	Ditto.	Ditto.	Do.
	9-11-81	9·4	·24	·0024	·006	·018	none	5·5·	2·1	3·4	No nitrites.	No blackening.	Do.
	1-3-82	15·2	·5	·0042	·004	·053	240	10·4	6·4	4·	Both.	Ditto.	Do.
	24-4-82	8·2	·46	·002	·011	·06	296	7·0	2·5	4·5	Do.	Ditto.	Do.
Jail well	30-7-81	39·4	5·85	·021	·023	·247	2,320	20·15	10·75	9·4	Both present.	Ditto.	Do.
	1-3-82	62·8	7·7	·0042	·015	1·31	12,822	32·	20·5	11·5	Ditto.	Ditto.	Do.
	24-4-82	64·4	8·0	·0053	·0072	1·021	10,253	31·5	18·5	13·0	Ditto.	Ditto.	Do.
Begum Bazar well ...	3-7-81	81·5	9·2	·045	·046	1·59	15,050	28·4	23·4	5·0	Ditto.	Blackening.	Do.
	30-12-81	96·4	8·62	·0053	·01	1·14	11,123	36·54	20·59	15·95	Ditto.	Ditto.	Do.
	24-4-82	103·2	13·52	·042	·021	4·66	46,976	26·	8·51	17·5	Ditto.	No blackening.	Do.
Peary Mohun Shah's well	30-7-81	105·6	10·6	·0037	·012	4·8	47,710	31·15	9·15	22·00	Ditto.	Slight blackening.	Do.
	30-12-81	135·6	15·4	·004	·005	2·47	24,412	37·94	6·9	31·04	Nitrates present, no nitrites.	No blackening.	Do.
Chand Khansamah's tank	26-9-81	38·0	4·45	·0058	·0332	·209	2,717	14·1	7·36	6·74	Both present.	Considerable blackening.	Do.
	30-12-81	33·6	4·05	·106	·054	·039	942	12·71	3·67	9·04	Nitrates trace, nitrites none.	Slight blackening.	Do.
Purana Mogul Taly well	26-9-81	86·5	11·52	·0042	·0116	·596	4,614	25·54	5·91	19·6	Present in traces.	Considerable blackening.	Do.
	1-3-82	64·71	10·37	·016	·019	1·7	16,810	31·5	15·0	16·5	Ditto.	Slight blackening.	Do.

No. 812, dated the 6th December 1882.

From—Dr. A. Crombie, Civil Surgeon, Dacca,

To—The Chairman of the Municipal Commissioners, Dacca.

"I have the honour to forward herewith copies of the results of analyses [see above table] which have been made from time to time by the Chemical Examiner to Government of the hydrant and well-water of Dacca, specimens of which have been sent to him for that purpose at intervals of a few months since July 1881.

"*The hydrant water.* This was examined five times. The total solids never exceeded 40 parts per 100,000 which is the limit of fairly good water. On two occasions, however, there was slight blackening on ignition of the solids, showing the presence of a small quantity of

organic matter. On all occasions the albuminoid ammonia (*i.e.* ammonia existing in composition in the organic matter present) was in excess of the quantity that ought to exist in tolerably pure water.

"Chlorine was never in excess of the proportion that may exist in unpolluted water. Nitrogen, which is an index to oxidised excreta, was on one occasion in quantity that showed considerable pollution. The heading "previous sewage contamination" shows the number of parts of London sewage, which contains the same quantity of nitrogen as 100,000 parts of the water under report. On one occasion there was none; on two occasions there was about ¼ per cent. of sewage in the water; and on one occasion there was nearly 6 per cent. of sewage in the hydrant water. On that occasion, on the 6th of September 1881, there were 35 parts of solid matter which was charred on ignition, ·009 of albuminoid ammonia, and the previous sewage contamination was represented by 5,850 parts of filtered London sewage in 100,000 parts.

"It is evident that on that date the Dacca hydrant water was highly polluted and not fit for consumption, and the cause of the pollution in all probability, as was pointed out by Dr. Purves who was then acting Civil Surgeon, was leakage of sub-soil water into the reservoir of filtered water at the Water Works. I am credibly informed that this reservoir has been so badly made that it cannot be emptied; that whenever an attempt was made to empty the reservoir there always remained two feet of water in it from leakage into it of sub-soil water; and that to prevent this leakage into the reservoir, it is always necessary to keep a head of water in the reservoir and so cause a leakage *outwards from* the reservoir into the surrounding soil. On the 6th of September there was a sudden rise of the sub-soil water-level to within three feet of the surface of the ground, and the consequence was that, the sub-soil water headed the water in the cistern, and there was leakage *into* the reservoir, and the diluted sewage which the sub-soil water always contains was distributed over the town. This is a dangerous accident which is constantly liable to happen, and, in my opinion, this faulty state of the reservoir deserves the most urgent attention of the Commissioners.

"Comparing the hydrant water with the river water, of both of which specimens were sent on the 9th of November 1881, I find that they are practically indentical, the diminution of the organic impurities in the hydrant water being very slight. The filtering medium used is not calculated to remove other than mechanical impurities (*i. e.*, matters in suspension, not in solution), and it is satisfactory to find that the process of filtration does not add to the organic impurities already existing in solution in the river water—a result which is most likely to occur unless great attention is paid to the periodic cleansing and renewing of the filtering beds.

"Passing to the consideration of *well-water*, I take first the large well at the Jail. This is a pucca well surrounded by a parapet and boarded over, and not in the immediate vicinity of any cess-pool. It is, therefore, more favourably situated and protected against pollution than any other well in Dacca. In fact it may be taken as containing Dacca sub-soil water free from accidental contamination. Yet it contained on two occasions 62 and 64 parts of solids in 100,000, 40 being the limit, and on the third occasion the solids were 39·4. The chlorine, which ought not to exceed one part, and is the best index of the presence of excreta, especially urine, existed to the extent of 5·8, 7·7, and 8 parts in 100,000. The ammonia, and nitrates and nitrites, were always in excess of the potable standard; and on one occasion it contained 10 per cent. and on another 12 per cent. of sewage matter. Since these analyses were made, the use of this well for drinking water in the Jail has been prohibited, as it is obviously perfectly unfit to be drunk. Nevertheless this is by far the best well in Dacca.

"Taking next the large pucca well at the Begum Bazar musjid, a well which enjoys a great reputation in the neighbourhood, I find that the total solids were 81, 96 and 103 on the three occasions on which it was examined, the limit of potable water being 40. The chlorine was 9, 8 and 13 instead of 1, and the previous sewage contamination amounted to 11,000, 15,000, and 47,000 parts per 100,000. This means that if a pint of filtered London sewage were taken and a little more than a pint of pure water added to it, the mixture would have the same composition as the fluid which the inhabitants of Begum Bazar habitually drink. It is obvious that such a fluid is not fit for use as a substitute for drinking water, and this well ought to be closed.

"It is needless to go over the analysis of each well in this way. The accompanying tables show that they are all unfit for use. Peary Mohun Shah's well contains from 105 to 135 parts of solid water, 10 to 15 parts of chlorine, and from 24 to 47 per cent. of sewage matter. It ought also to be closed at once.

"Chand Khansamah's tank at Amligola is not so impure, containing less than 40 parts of solids, 4 parts of chlorine, and 1 to 2 per cent. of sewage matter. Purana Mogul Taly well contains 64 to 86 parts of solids, 10 or 11 parts of chlorine, and 4½ to 17 per cent. of sewage matter. It is also quite unfit for use.

"If such is the condition of the large public wells, what must be the state of the thousand private wells in almost every house in Dacca within a few feet of a large cess-pool, if not in the same courtyard, just over the wall? Cess-pools are never emptied, and yet they do not overflow. They rise and fall with the level of the sub-soil water, which has an annual tide of 15 feet. When the rivers fall at the end of October, so does the sub-soil water, and so do the cess-pools and the adjoining wells—and there is a free interchange of contents between them all over Dacca, through the intervening porous sub-soil. At other seasons, when the wells are always being emptied and the cess-pools filled, the interchange is more one-sided, *i.e.*, it must

always be from the cess-pool to the well Hence it is that all wells sunk in the sub-soil of Dacca must be, as the Chemical Examiner shows they are, mere collections of filtered and diluted cess-pool contents.

"It may be objected that if the well-water which is habitually drunk by thousands of the inhabitants of Dacca is so utterly unfit for use, how is it that any of the people continue to live in good health. It must be remembered that impure water is not so much an actual as a potential danger. People may go on drinking diluted sewage with comparative impunity, until that diluted sewage happens to contain the "germs" of disease, *i.e.*, until it contains the stools of cholera patients, when we get such an outbreak as we had in July and August of this year, each cholera patient's stool gradually passing into his neighbour's well.

"The practical conclusions which I wish to place before the Municipal Commissioners are, first, that the imperfect state of the reservoir of filtered water at the water works be remedied, and, secondly, that every cess-pool and every well, both public and private, be closed, beginning with the wells situated in those parts of the town supplied with hydrant water, and with the cess-pools situated where it is possible to adopt the privy system at once.

"I append a table showing the averages of the different waters analysed, for easy comparison":—

	Total solids.	Chlorine.	Free ammonia.	Albuminoid ammonia.	Nitrogen as nitrates and nitrites.	Previous sewage contamination.
LIMIT OF— Potable water	40·	1·0	·01 to 2·0	·008	0·5	Nil.
River ditto	10·	0·26	·002	·008	0·42	116
Hydrant ditto	15·	0·41	·003	·006	0·17	148
Jail well	53·	7·18	·010	·015	0·86	8,498
Begum Bazar well	93·7	10·48	·031	·029	2·48	24,716
Peary Mohun Shah's well	120·6	13·00	·0038	·008	3·63	36,067
Chand Khansamah's tank	35·8	4·25	·065	·043	0·169	1,829
Purana Mogul Taly well	75·6	10·94	·010	·015	1·148	30,712

Extract, paragraph 8, from the Proceedings of the Municipal Commissioners at a Meeting held on the 12th January 1883.

Paragraph 8.—"Considered the memorandum from the Civil Surgeon regarding the Chemical Examiner's analysis of the hydrant and well-water of Dacca. Resolved that a Sub-Committee, consisting of the Chairman, the Executive Engineer, and the Civil Surgeon, be asked to enquire and take measures to remedy the imperfect state of the reservoir of filtered water at the Water Works, and that the Civil Surgeon's suggestions to fill up all cess-pools and "*gors*" be adopted.

"Proposed by the Chairman and seconded by the Vice-Chairman, that the Secretary's suggestion of issuing notices on all alleged owners or occupiers of houses or lands surrounding cess-pools, either to close them or to disown ownership of some, be adopted, and that such notices be issued on all owners or occupiers of houses and lands that surround cess-pools and filthy tanks commonly called "*gors.*"

"With regard to the closing of private wells, the native gentlemen of the Committee present being of opinion that the wells in private houses even adjacent to hydrants now existing should not be closed, it was resolved that the impure public wells only on the line of the present water-supply be closed, and that the Civil Surgeon be requested to give a précis of his above letter, which should be translated and widely circulated in the town."

Remarks by the Sanitary Commissioner for Bengal.

I ENTIRELY concur with the remarks made by Dr. Crombie, and would recommend the Municipality unceasingly to endeavour to give effect to his propositions regarding remedies to be applied to the defective reservoir for filtered water, and for closing all private cess-pools and wells. With the public ones they ought to be able to deal at once and completely. The existence of these wells and cess-pools is a continual menace to the salubrity of the town, and an invitation for fatal invasion of any wave of epidemic disease which may happen to pass over the population.

APPENDIX No. VIII.

ABSTRACTS OF INSPECTION REPORTS ON TOWNS VISITED IN 1882.

Abstracts of Inspection Reports on Towns visited in 1882.

Meherpore.—*Inspected in January.*—Very grave sanitary defects were found to exist in this Municipality, of which the chief are the following: The town is badly kept, being overgrown with jungle, and full of pits containing foul water in which bamboos are steeped. The drainage is very defective, the roadside drains being often unconnected and ending in pits which, being undrained, allow the water to soak in and evaporate. Several of the drains are also deep and dangerous. The conservancy arrangements were much neglected; the establishment altogether insufficient, and the streets unswept. There is not a single public latrine; the private ones consist, for the most part, of well-privies, which are only cleaned when full to the brim; the other privies are not cleaned even once in 10 years; and defœcation is permitted anywhere and everywhere. The reserved tank and wells were not properly looked after, the banks of the former being resorted to for defœcation; the private tanks and wells were in a bad condition, being used promiscuously for all purposes; and the river Bhyrub, the water of which is also used for drinking and other purposes, was in a frightful condition, its banks being very foul, and corpses thrown into it just at the fishing weir above the town. The arrangements connected with the disposal of the dead were also very unsatisfactory, no appointed burial-ground existing, interment within the enclosures of houses or in the fields outside the town, being the rule, and the pauper dead being conveyed to some garden, and simply left there.

The recommendations were:—(1) To utilize the expenditure on account of the Police, which is no longer to be charged to the Municipality, in correcting sanitary defects. (2) To consider the advisability of introducing Parts VII and VIII of the Bengal Municipal Act into the town. (3) To repair the roads, uproot jungle, remove the projections over the drains, and fill up the numerous pits. (4) To give effect to the proposed drainage scheme as early as practicable. (5) To provide a sufficient number of public latrines, and to check the practice of promiscuous defœcation. (6) To cause the streets to be regularly swept, and to utilize the sweepings in filling up the pits. (7) To suppress the well-privies, and to induce their owners to provide in their place properly constructed surface privies. (8) To have the private privies cleaned by municipal mehters on the Burdwan plan, and the night-soil buried on the Monghyr plan. (9) To remove the tannery, kilns, and the skinning and disemboweling of animals, beyond municipal limits. (10) To set apart more tanks for drinking purposes; to protect the reserved tank and the river Bhyrub effectually from pollution of every kind; to induce the people to keep their tanks and wells in order, and guard them from surface pollution; and to strictly prohibit the practice of throwing corpses into the Bhyrub. (11) To provide a burial-ground for Mahomedans outside the Municipality, and to stop the practice of intramural interments; to establish a burning ghât under municipal management and enforce complete cremation; to provide a burial-ground for Christians; and to see that the pauper dead are properly disposed of at the cost of the Municipality. (12) To adopt steps for the introduction into the town of the Compulsory Vaccination Act. (13) For the improvement of registration, to utilize the provisions of the Compulsory Registration Act, (which is in force in the town), particularly its penal clause; to cause the Tax Darogah to ascertain and report deaths, and to adopt the use of trifoil cheque-books.

Action taken on the suggestions:—The utilization of Parts VII and VIII of the Bengal Municipal Act was approved by the Municipal Commissioners, but their introduction was suspended, pending approval by the Commissioner of the Division. The delapidated drains were repaired, and the deep pits filled up; but their thorough improvement was deferred until the introduction of the proposed drainage scheme. Much of the jungle on the sides of the public roads and lanes was removed by the Municipality; and notices were served on the rate-payers to clear away the remainder within a specified time. The filling up of the pits was considered to be a difficult matter, inasmuch as, considering their large number and dimensions, it would be futile to ask the people, who are generally very poor, to fill them up, or to expect the Municipal Commissioners to undertake the task, the funds at their disposal not being sufficient for the purpose. Effect could be given, it was said, to the proposition, by utilizing the street sweepings, but as almost all the streets in the town are kutcha, it was considered useless to sweep them. The Commissioners, however, propose when, under the operation of Part VII of the Act, the refuse and rubbish of houses are removed, to utilize these in filling up the pits. Owing to the town being a large one and requiring 40 sets of latrines for the 40 sections, situated at long distances from one another, into which it is divided, to the cost of mehters being great owing to their having to be imported, and to the amount hitherto allotted for the Police having been set aside to meet the cost of the drainage scheme, and other public works, the Commissioners do not find themselves in a position to provide public latrines, and thus prevent the poor from defœcating everywhere. They are, moreover, of opinion that the system of public latrines should not be introduced into the Municipality "to the utter exclusion of all its higher and nobler purposes." Provision has been made in the budget for an establishment for cleaning the private latrines, and it has been determined to abolish all the well-privies. Arrangements have been made to provide burning ghâts and burial-grounds, and to improve the municipal tank.

Mohespore.—*Inspected in February.*—Many sanitary defects were found to obtain in this town. The roads are unmetalled and encroached upon; the drainage is defective; the conservancy arrangements are very unsatisfactory; there are no municipal markets or slaughter-houses; the water-supply arrangements are sorely in need of improvement; there are no municipal burial-grounds or burning ghâts. The income of this town has hitherto been too small for carrying out any appreciable sanitary work; but as the cost of the Police will for the future not be a burden to the Municipality, it is expected that a substantial sum will be available yearly for correcting the above defects.

The suggestions were:—(1) To frame and bring into operation a code of bye-laws in order to give force and effect to the sanitary clauses of the Bengal Municipal Act. (2) To remove the encroachments on the roads, and fill up the filthy pools, which abound in the town, with street sweepings, the streets being regularly swept, which is not done at present. (3) To give early effect to the drainage scheme under consideration. (4) To provide a sufficient number of public latrines. (5) To induce the owners to do away with well-privies, and to provide in their place properly constructed surface privies. (6) To have all the private privies cleaned by municipal mehters. (7) To take up ground for trenching night-soil. (8) To increase the conservancy establishment, importing mehters for the purpose. (9) To select, reserve, improve and effectually protect from all pollution some of the tanks in different parts of the town. (10) To strictly prohibit resort to the banks of the river for purposes of defœcation. (11) To appoint a burial-ground for Mahomedans outside the town, insist on their using it, and stop all intramural interments. (12) To cause the Registrar to test the mortality returns furnished by the Police when going his rounds. (13) To consider the desirability of utilizing the Compulsory Registration Act IV (B.C.) of 1873 for the improvement of registration.

Action taken on the suggestions:—It was reported that a pucca drain had been made along the Sudder Road and that it was in contemplation to extend the same next year; that the latrine system was about to be introduced; that lands had been set apart for a burial-ground and a burning ghât; that the conservancy establishment would be strengthened by the importation of two mehters; that notices had been served requiring the removal of all noxious vegetation; and that allotments had been made in the Budget for re-excavating one or two tanks, and for generally improving the sanitary condition of the town as far as possible.

Santipore.—*Inspected in March.*—Very grave insanitary conditions were found to obtain in this town. The drainage is defective, in fact the town is almost devoid of regular pucca drains. Only surface cleansing is attended to. There are no public latrines; the private ones are merely well-privies, which are only cleaned when nearly full; the poor resort to every ditch, waste place, jungle or convenient corner hidden from observation. The markets are very inadequately drained and are unprovided with water and latrines; offensive and dangerous trades were carried on within municipal limits. The arrangements connected with the water-supply and disposal of the dead are as bad as bad can be. No tanks are set apart for drinking purposes and no wells provided for public use, the private tanks, as well as the river, being unprotected from surface drainage and other pollution, and their banks being invaded by jungle and resorted to for defœcation. No burial-grounds for the Mahomedans and Christians are provided; the pratice of interment within the enclosures of houses is general; and burials close to the riverside are carried on by the Boistubs.

Suggestions offered:—(1) To devise means for raising the expenditure, so that funds may be available for sanitary purposes, and to utilize, for the same purpose, the large sum hitherto paid for the Police, but which has become available for sanitary uses under the orders of Government on the subject. (2) To administer the sanitary laws with the needed activity and completeness, and to frame and bring into operation a code of bye-laws by which to emphasize their effect. (3) To carry out, as soon as possible, the proposed drainage scheme; and, in doing so, to avoid deep drains, providing instead sufficiently wide saucer-shaped ones. (4) To provide an adequate number of cheap public latrines situated in convenient and accessible positions, those for females being separate from those for males; to suppress the well-privies, causing their owners to provide in their place properly constructed surface privies; to have the private privies, when constructed, cleaned by municipal mehters, according to the Burdwan arrangements. (5) To bring into operation the Latrine Act VI (B. C.) of 1878, in order that the cleaning and supervision of both public and private latrines may be effectually carried out. (6) With the establishment of these latrines, to make arrangements for trenching the night-soil on the plan followed in Monghyr. (7) To strengthen the establishment, and to maintain night-soil carts, in order that the conservancy arrangements may be efficiently carried out. (8) To provide a slaughter-house. (9) To prohibit the carrying on of dangerous and offensive trades within municipal limits. (10) To set apart a sufficient number of tanks, removed some distance from the river, for drinking purposes, and to have them embanked against surface pollutions and effectually guarded from employment for other than drinking purposes; to provide some public wells, protected with parapets and supplied with platforms communicating with the nearest drains, so as to preclude washings or refuse of any kind re-entering the wells; and to take great care to see that the river is kept free from pollution, adopting measures for detecting and punishing offenders. (11) To establish burial-grounds having sufficient accommodation to meet the entire requirements of the Mahomedan community, and when these grounds are established, to take steps to entirely suppress the practice of interment

within enclosures of houses or in other places than the burial-grounds themselves; to provide also a burial-ground for Christians; to prohibit the practice of burying the dead close on to the river prevalent among the Boistubs; to dispose of the pauper dead through municipal agency; and to prohibit the murdafrashes from appropriating to themselves the clothes of those who die from cholera, small-pox, or other infectious diseases. (12) To utilize the provisions of the Compulsory Vaccination Act. (13) To consider the advisability of providing a hospital for contagious cases and accommodation for the houseless poor and the aged. (14) To accord special attention to the very defective registration of births and deaths, and to improve it by the means suggested, fully utilizing the provisions of the Compulsory Registration Act, which law has to all intents and purposes, been a dead letter since its introduction in 1875.

Action taken on the suggestions:—No report received, except that it was resolved that as no license had been taken out for the lime kiln complained of, its continuance be disallowed.

Beernugger.—*Inspected in March.*—This town is rapidly going to ruin; homesteads are deserted; jungle prevails; and grave defects involving the conservancy and the water-supply obtain. No bye-laws, framed under the Bengal Municipal Act V of 1876, has been brought into operation. The sanitary clauses of the Municipal Act do not appear to be administered fully and actively. The roads are neglected, and jungle and rank vegetation abound. A proper system of drainage is another great want. The conservancy establishment appears to exhaust its energies in only looking after the drains. The poor defæcate anywhere and everywhere. The drinking water-supply arrangements call for urgent attention. The formation of a burial-ground is immediately necessary, and it is suspected that burials within enclosures of houses is practised.

Suggestions offered:—(1) To devote the amount hitherto defrayed for Police to sanitation. (2) To accord serious attention to the defects under the heads of conservancy, water-supply, &c. (3) To frame and bring into operation bye-laws in connection with the Municipal Act. (4) To uproot all jungle and remove all rank vegetation. (5) To level the drains falling into the Baromashia khal. (6) To provide a sufficient number of public latrines. (7) To prevent the people from defæcating anywhere and everywhere. (8) To cause the streets to be daily and properly swept, the sweepings being utilized in filling up excavations. (9) To suppress all well-privies. (10) To induce the people to provide for themselves properly constructed surface privies. (11) To cause all private privies to be cleaned by municipal mehters. (12) To take up ground for trenching the night-soil. (13) To adequately increase the establishment in order that the conservancy arrangements may be satisfactorily carried out. (14) To remove all stable litter. (15) To provide a municipal market and a slaughter-house as soon as funds permit. (16) To take steps to embank and reserve the two tanks which had been pointed out as the most suitable for drinking purposes. (17) To ascertain whether interment and cremation do take place within the enclosures of houses, and to stop the practice if it exists. (18) To utilize the provisions of the Compulsory Registration Act.

Action taken on the suggestions:—It was reported that a draft code of bye-laws was in course of preparation and would be ultimately submitted for approval; that the work of clearing the jungle was in progress; that some of the drains falling into the Baromashia khal had been excavated and levelled; that the introduction of a general latrine system was, at a meeting of the Commissioners, considered not feasible; that an increase to the conservancy establishment had been proposed, which would entail with it the sweeping of streets; that the necessary steps would be adopted to remove the stable litter complained of; that two tanks had been reserved for drinking purposes; that a site had been fixed for the interment of human remains; that stringent orders had been issued prohibiting burials within household precincts; that vaccine operations were in progress; that arrangements had been made for improving the registration; and that the remaining suggestions would receive attention when funds became available for the purpose.

Ranaghat.—*Inspected in March.*—The sanitary condition of this town was found to be, in several respects, very unsatisfactory. The drainage is defective; surface cleansing is insufficiently cared for; there are no public latrines; all the private latrines consist of well-privies; the people generally defæcate in places most convenient to themselves; the drinking tanks are unprotected from pollution.

The suggestions were:—(1) To devise means for raising the income, so that a sufficient allotment might be made for carrying out sanitary improvements, and to use, for the same purpose, the savings derived by the Municipality, having been, under orders of Government, relieved of the cost of the Police. (2) To administer the sanitary clauses of the municipal laws with greater activity than at present. (3) To carry out the proposed drainage scheme. (4) To provide a sufficient number of cheap public latrines, so that promiscuous defæcation may be obviated. (5) To suppress the well-privies, the owners being induced to provide in their place properly constructed surface privies. (6) To have these privies, when built, cleaned by the municipal mehters, according to the Burdwan plan. (7) With the establishment of public and private privies to make arrangements for trenching the night-soil on the Monghyr plan. (8) To have the streets swept daily. (9) To strengthen the establishment, so that the conservancy arrangements may be effectually carried out. (10) To consider the advisability of introducing the Latrine Act. (11) To induce the owners of the private markets to provide them with latrines. (12) To effectually guard the tanks reserved for drinking purposes from pollution, embanking them, and uprooting the jungles on their

banks, which is resorted to for purposes of nature. (13) To cause the owners of foul private tanks to put them into a wholesome condition under the provisions of the law on the subject. (14) To improve registration as per suggested instructions, and for the same purpose to fully utilize the provisions of the Compulsory Registration Act, which has been extended to the town.

Action taken on the suggestions :—It was resolved that the people be induced gradually to give up the well-privies; that the construction of new well-privies be disallowed in thickly-populated quarters of the town, unless, after due consideration of the locality in which they are proposed to be situated and their neighbourhood, it is deemed unobjectionable to permit their erection; that public latrines be constructed in different parts of the town; that notices be placarded prohibiting people from defœcating in places other than a public or private privy; that the conservancy establishment be strengthened and carts provided for sweeping the streets and attending to the latrines; that the scheme of having the private latrines cleaned by municipal mehters be gradually introduced; that application be made for the extension of the Latrine Act to the town; that the owners of the private markets be called upon to provide them with latrines; that the bank of the tanks be cleared of jungle and steps adopted for protecting them from pollution; that the owners of the foul tanks be called upon to put them into wholesome condition; and that ground be taken up for burying night-soil.

Kurseong.—*Inspected in September.*—Much commendable interest for the sanitary welfare of this town is evinced by the Municipal Commissioners, particularly with regard to building arrangements—and, it is said, that by the further application of the law relating to these arrangements, the town will soon improve in appearance and comfort. Among other improvements effected, a masonry tank for storing water was in course of construction, and a new water service will, it is expected, be opened out during the next cold season, when one great want of the town will be met to some extent. But there yet remain several sanitary defects that call for rectification, chief among them being the want of a proper system of roads, most of the existing ones being merely fair weather pathways, insufficient public latrines, and promiscuous defœcation.

Recommendations made :—(1) To more fully and actively utilize the sanitary clauses of the municipal laws, and to introduce a code of bye-law to emphasize their effect. (2) To apply, through the proper channel, for the exclusion, by legal enactment, of the large areas of forest and tea lands now included within the boundaries of the Municipality, where, it is said, it is difficult to exercise efficient municipal control for sanitary and other purposes. (3) To establish a proper system of roads. (4) To provide additional conveniently situated latrines, so as to prevent the people from resorting to the jungle and elsewhere for defœcation. (5) To strengthen the conservancy establishment, so that proper attendance both to surface cleansing and latrines may be ensured. (6) To lay down Portland cement on the floors of the existing latrines; to select a conveniently situated and sufficiently large site for trenching night-soil, and to cultivate the ground when manured. (7) To cause the private privies to be attended to by the municipal mehters, and to levy a fee for the service. (8) To bury the street-sweepings and rubbish instead of throwing them down the khud. (9) To require the owner of the private slaughter-house to cement its floors and drains, and to keep them in a cleaner condition. (10) To remove the tanneries beyond municipal limits. (11) To furnish the Police with notices of interments and cromations, so that registration and suspicious deaths might be more fully controlled. (12) Instead of continuing the present practice of including the vital statistics of the town with those of the thana to which it is subordinate, to keep up a separate record of them now that it has been constituted a Municipality, and to introduce into it the Compulsory Registration Act.

Action taken on the suggestions :—No report yet received.

Darjiling.—*Inspected in October.*—The sanitary defects found to exist in this sanitarium, the only one in Bengal, were very grave in character. I think it right, in order that a clear conception may be formed of their seriousness, to submit here, in extenso, my Inspection Report on this Municipality, with the suggestions which were offered for rectifying existing defects. Some of these suggestions viz. those mentioned on page lxxxvi have been attended to; the correctness and validity of some are disputed; and action will, it is said, be taken at future meetings with regard to the rest. The Municipality having now become fully alive to the existence of the defects pointed out, will, it is hoped, do all within its power to minimize them.

Population.—This is a first class Municipality containing, according to the last census, 7,018 inhabitants, distributed as follows :—

According to Sex.		According to Religion.	
Males	4,579	Christians	160
Females	2,439	Hindus	4,592
		Mahomedans	614
		Other races	1,652

2. *Municipal Income and Expenditure.*—The income amounted during the year 1881-82 to Rs. 62,325, including a balance in hand at the close of the preceding year of Rs. 2,680.

This amount was expended as follows:—

	Rs.
For Police	3,809
" Interest on loans	4,583
" Municipal establishment	3,403
" Conservancy ditto	9,954
" Maintenance and repair of roads	18,360
" Sanitation	5,705
" Vaccination	144
" Treatment of sick	1,665
Miscellaneous	10,343
Total ...	57,966

leaving a balance in hand at the close of the year of Rs. 4,359. The amount returned under head of sanitation was expended on—

	Rs.
Drainage works	3,411
Water-supply	2,294;

but it represents only 9·2 per cent. of the income, which is much too small a proportion to allot for so important a purpose out of the very appreciable revenue which accrues to the Municipality. No doubt the damage done to the roads by the heavy rains prevalent at Darjiling draws largely upon the municipal revenues for expenditure on repairs. Nevertheless it appears to me that, Rs. 18,000 is an unnecessarily large amount to devote to this purpose, considering that several other important works, to which reference will presently be made, remain still unprovided for. With careful economy, together with the utilization of the sum hitherto expended on Police, not now chargeable to the Municipality, sufficient funds ought certainly to be available for the most urgent sanitary improvements. Darjiling, which in point of site, of climate, of conditions of soil and water, of all its undeniably salubrious physical aspects in fact, is free from any kind of morbific influence, which can justly be attributed to either telluric or atmospheric causes, ought, in every respect, to justify its claim as a wholly reliable health resort for Calcutta, more especially so, as it is the only one which is readily accessible to the residents of the Metropolis. The place ought, therefore, to be kept free, as far as practicable, from all conditions likely to neutralise its many natural advantages; and, although there are evils which must necessarily arise wherever people congregate in considerable number, there appears to be no reason why these should not be as successfully combated at Darjiling as they are elsewhere.

3. *Operation of the Municipal Laws.*—The sanitary clauses of the Municipal Act and the bye-laws in operation appear to be only indifferently administered. Much greater activity is needed radically to suppress the many insanitary practices prevailing in this town. The suggestion made in the last Inspection Report for the extension to this Municipality of Act V (B.C.) of 1878, empowering the Commissioners to control the public and private latrines, and to levy a fee for supervising the latter, has not yet been thoroughly adopted. Further on it will be shown how great is the necessity for utilizing the provisions of this law.

4. *Roads.*—The condition of the roads is good. Lighting of some of these has been commenced, although only imperfectly. An endeavour was made to give effect to the suggestion made in the last inspection report regarding the improvement of the station by planting indigenous flowering and natural forest trees, but it was found difficult to carry out the scheme, as the Municipal Act does not vest the Commissioners with control over the property of private owners. As this Act is about to be amended, opportunity should be taken of the occasion to rectify, through the proper channel, this with other defects referred to in subsequent sections of the present Report.

5. Appended to this Report will be found a note addressed to me by Mr. Justice Cunningham, which I commend to the consideration of the Municipality. It represents the substance of numerous similar complaints which have been made to me of the state of Darjiling, and supports, in many respects, the results of my own personal observations.

6. *Houses.*—That Darjiling is very much overbuilt is only too evident, but what is surprising is that the Municipality have never, as I am informed, secured to themselves the right of veto upon new constructions undertaken without their previous approval and sanction. This power appears to be so primary a necessity in the constitution of the laws of every Municipality, that it is unaccountable that no steps have yet been taken to provide for it in Darjiling. No new building of any sort should be commenced without permission previously obtained from the Municipality, sanctioned by approval of plans submitted for their inspection, and passed by the local Health Officer. To permit structures of all sorts and kinds to be run up on every avoidable patch of ground, as is being done at Darjiling, regardless altogether of anything but the proprietor's individual convenience, is to violate one of the primary principles of urban sanitation. Not only should the most scrupulous supervision be maintained in respect to proposed buildings, but no alteration or addition of any sort to existing structures should be allowed, until they have received the approval of the Health Officer and the sanction of the Municipal Committee.

7. Another most important matter in a place like Darjiling is efficient house to house inspection. Hitherto, as far as I can ascertain, nothing of the kind appears to have existed. If among the subordinate officers of the Municipality there is a Nuisance Inspector, it is very evident that that officer does not do his duty. It is needless for me to append a statement of all the instances of negligence and immundicity, which have either come to my own personal notice, or have been indicated to me by others. An active and capable Nuisance Inspector would soon discover these, and bring offenders immediately to task; nor does there appear to be any reason why a smart subordinate should not, among a population of only 7,000 inhabitants, submit a report monthly of the condition of every house, hut, or hovel in the place. The efficient organization of an establishment for this purpose is one of the subjects to which serious and early attention should be directed.

8. *Drainage.*—The drainage has been described in former reports. Praiseworthy attention has been bestowed on the road drains generally, and on some of those in the bazar. Many of the latter, however, are very imperfect. They are frequently nothing but roughly excavated channels covered over in many places with wooden stages, so that they are hidden to view and unsuspectingly become traps for the accumulation of all sorts of refuse and filth. That they are often used as latrines and urinals by the natives, whose careless habits in this respect are well known, is certain. It is true that during the rainy season it does not much matter what happens in these drains, for the abundant flushing which they continually obtain from the prevailing heaviness of the rainfall, speedily renders them innocuous. But during dry seasons, when this flushing does not occur, they become not only a nuisance, but also a grave source of danger. What takes place then is the following: Organic refuse of various descriptions finds a resting place in the many nooks and crevices of those irregularly cut channels. There it undergoes a process of decomposition, gradually dries up, assumes a more or less pulverulent form, and is thus carefully prepared to be taken up by the first eddying air current for distribution into the surrounding atmosphere, and for inhalation by the unwary passers-by. Pathological experience shows that this is one of the most common ways in which typhoid and other infectious fevers become disseminated among a population, and it is by no means one of the least alarming aspects of this question that pathogenic agents of this description may be dormant in a dry state for months, or even years, maintaining, like vegetable seeds, latent vitality, to be called into terrible activity whenever they chance to encounter conditions favourable to their germination. It is under contemplation, I find, to take up shortly the house drainage of Wilson's bustee and the Drum Drind property, together with the drainage of the native town, for which latter work the Municipality is negociating a loan. The Maharajah of Burdwan has also been called upon to improve the drainage of his property in Black Town. Such anticipations are worthy of all support, and chiefly of that kind which is the most likely to ensure their speedy realization. In reply to the question "has any disease been noticed in connection with obstructed drainage?" your Secretary, I observe, replies in the negative. The well known case referred to in Mr. Justice Cunningham's note, and marked (1), does not bear out this reply. It is doubtful even whether this one is the only case which has occurred during the year, whose origin can be attributed to obstructed drainage.

9. *Conservancy.*—Some improvements have been effected under this head. The number of the public latrines and the mehter establishment have been increased; the floor of the municipal stables has been made pucca, and a scheme has been developed, which, it is said, will be brought into operation next year for the improvement of the conservancy, drainage, &c., &c., of the native town. This also is one of those advantages in prospective for which speedy realization must be desired by every one interested in the sanitary state of Darjiling. How urgent this desire at present is can be readily guaged by such a condition of things as rendered the vivid description contained in paragraph 10 of Mr. Justice Cunningham's note possible. There appears to be no justifiable reason why the road-sweepings should be "pitched down the hill on the side of one of the most beautiful and favourite walks in the station." It would not be a very difficult or expensive matter to construct branch roads descending to a distance of at least 150 feet below the present shoots, nor does there appear to be any satisfactory explanation why the water from the numerous streams, which now runs uselessly down both sides of the Darjiling Ridge, should not be caught by and conveyed along the inner gutter of the most convenient road to maintain a continually flushing action upon the sites of deposit, and thereby preserve the refuse in a *moist* state, since, as has been explained above, it is such matter in a *dry* state which we have most to fear.

10. *Markets and slaughter-houses.*—There is a municipal market and a municipal slaughter-house; a new butcher's shop is also in process of construction, but is not yet ready for use. The building of a new market, I am informed, has been postponed, pending decision on its position. A plan of this building should be submitted to this office for inspection. The drainage of the existing market place is by no means satisfactory, and requires careful attention. Open drains are better than the closed ones in use where rubbish accumulates without observation. The state of the slaughter-house is also by no means satisfactory. I cannot accept the statement made in the inspection note-book that the slaughter-house is a considerable way out of the station, nor can I defend the practice of throwing the offal, &c., down the khud. It should be removed daily and properly buried. The meat inspector should be directed also to inspect every article exposed for sale in the markets, and carefully to supervise the sanitary arrangements of the markets, slaughter-house, and butcher's shop. Attention to the present system of milk-supply, alluded to in paragraph 11 of Mr. Justice Cunningham's note, with a view to improvement, is also very desirable.

11. *Water-supply.*—The arrangements under this head are the same as observed at the last inspection. Suggestions were at that time made for the extension of the water-supply scheme to the Bhootia bustee, to the quarters occupied by the moochees and butchers in the bazar, and to the jail; and it was further urged that proper places should be organised for the washing of clothes and for horse troughs, for which purpose pipe water should exclusively be used. I do not observe that any action has as yet been taken on these suggestions.

12. *Disposal of the dead.*—There are no remarks to offer on this subject, except that the private burial and burning places should be registered; that the small-pox, cholera, contagious disease, and lunatic dead should be buried or cremated by the Municipality at its own cost, and that registers of the deceased should be kept at the burning and burial places.

13. *Vaccination.*—The arrangements for this purpose continue the same. I have no further remarks to offer on them.

14. *Registration.*—The subjoined statement shows the results of registration in 1882, based on the figures submitted to this office up to date, as compared with the preceding year:—

			Ratio per 1,000 of population.			
			Deaths.		Births.	
			1882.	1881.	1882.	1881.
Darjiling	town	...	19·26	17·21	10·25	5·92
Kurseong	thanna	...	5·58	10·37		
Phansedewah	"	...	5·62	8·00		
Darjiling	"	...	7·98	10·75		
Kalimpong	"	...	7·13	37·42		
	District	...	7·05	10·73		

The figures indicate that with some improvement in the urban circle there has been a marked falling off in all the rural areas, and that the results throughout are absurd, indicating very clearly that very little or no attention is bestowed on this subject. Is it too much to hope that the Municipal Commissioners, the Deputy Commissioner, and the Police, will direct more earnest and most sustained effort to the improvement of registration in the areas under their respective jurisdictions? Repeatedly as it has been already urged, the request is again submitted that, the provisions of the Compulsory Registration Act, particularly its penal clause, may be fully utilized, and that the suggestions for improving registration in other ways offered in former reports, may be more seriously considered.

Note by Mr. Justice Cunningham *on Act V of* 1876 (*B*).

"You will not, I hope, think me officious if I venture to address you as the chief sanitary official of Bengal, with regard to the sanitation and public control of Darjiling. It is a subject in which all we residents of Calcutta, whose holiday is almost necessarily taken at Darjiling, feel a deep personal interest; and as the place grows, as it obviously will, it becomes every year of more serious importance. My apology for trespassing into your domain must be that I have had some personal experience of the inconveniences to which the present state of things contributes. My family has had a very narrow escape of destruction by a cataract of mud and rocks, caused by the overflow of the drainage on the mountain side above the house which I was renting, No. 2, Aukland Terrace. Subsequently I was obliged to leave the same house at a moment's notice, owing to the fall of the revetment which had been just built to support the road above, and the house being pronounced by the Road Inspector to be unsafe. Early in the season a lady in the adjoining house to mine died from blood-poisoning, attributable, in the opinion of the three doctors who examined the case, solely to the condition of a drain which ran under one of the rooms. Danger and deaths of this sort are preventible, if proper precautions are taken; they are certain to occur if matters are allowed to go on, as it appears to me that they do at Darjiling, without adequate skill, experience, attention, and money being devoted to securing the public health, comfort, and safety, and guarding against those dangers to which the concentration of a considerable population in a limited area necessarily gives rise.

2. "I will mention several of the matters in which, I think, reform is needed; and, in doing so, I trust I may be understood as intending no criticism on, or discourtesy to, any of the local officials, high or low, as to whose performance of their duties I have not any right, and certainly no wish, to express an opinion. The points to which I refer are connected with the system and the law, not the conduct of individuals.

3. "In the first place, Darjiling is greatly overbuilt. No one can look at the place without seeing that the houses are crowded to a degree that must in the long run be prejudicial to health, and which will inevitably, if vigilant precautions are not taken. result, at no distant date, in an outbreak of disease. An Indian house, do what you will in the way of protection, must inevitably contaminate the surrounding soil. The crowds of servants, hill-men, &c., whose habits and condition do not favour general cleanliness; the drainage of stables and cow-sheds; the usual method of house conservancy; the sweepings of the cook-house—all favour the probability of a large amount of impurity, solid and liquid, gradually passing into the soil, and the subsoil becoming thoroughly and dangerously impregnated.

One main remedy for these bad consequences is an ample space around every house, on which the purifying effects of soil and air may work a natural cure. But what do we see at Darjiling? Houses crowded wherever there are sufficient square feet to allow of a house being built, utterly irrespective of the surrounding buildings and of the question whether there is room enough for purity and health. Take for instance the block of buildings just below the Secretariat, built close against a high bank, positively all jammed together, so that it is difficult to distinguish one from another. Will any sanitary authority venture to say that these houses can be really healthy? and, by way of improving matters, I observe that another house is now being squeezed into the few square feet which remained unoccupied by the pathside, the whole of which is not really sufficient for a single room of decent and healthy proportions. What, one would like to know, is the condition, as regards saturation, of this bank and of the soil on which these houses stand? What the chance of invalids who come up, enfeebled by the hot weather, of regaining health and strength in buildings thus situated? One result of this crowding is the impossibility of having the servants' latrine and the receptacle for house filth at a sufficient distance from the house to avoid the effluvium, which such places almost inevitably produce. Several of the newest and best built houses in the place are not free from objection in this respect. One of the houses of the block below the Secretariat, to which I have already referred, has been mentioned to me as objectionable from the smells which are frequently perceptible; and the same was the case in the house which I was occupying, in which from time to time a bad smell, especially in wet weather, was perceptible, for which it is difficult to assign any cause, but the general impurity of the soil. As in this last case the servants' latrine was placed on a high bank just above the house, it is easy enough to assign the cause—the subsoil filtration of impure matter.

4. "With regard to this house, moreover, another, more fatal, objection existed. It stands at the bottom of an almost perpendicular hillside. Some years ago the same thing occurred, which has now happened, a portion of the hill gave way, the then existing house was overwhelmed, and the inmates escaped for their lives from the top windows. By whose authority was another house erected on a site which was ascertained to be of so dangerous a character? What precautions the municipal authorities may now be taking I know not; or whether the nature of the ground admits of the place being rendered really safe. The revetment built after the first landslip this season, gave way during the late heavy rain, and so weakened the adjoining soil by its fall that the Road Inspector informed me that a large mass of the mountain side, immediately overhanging the house, had given way, and must sooner or later come down. In the meanwhile he considered the house to be unsafe for human habitation. What course do the municipal authorities intend to be taken about this house? Will they allow it to be offered on lease for the ensuing season, and some unwary tenant to be exposed to the dangers and inconveniences which my family has twice undergone?. If they do, they will in my opinion, and I should hope in yours, seriously misinterpret the duties of their position as custodians of the public safety.

5. "The first thing accordingly needed is that the local authorities should possess, and freely exercise, the power of refusing leave to build, or, if built, to lease houses which cannot be occupied without risk either to the inmates or the general health. No new house should be allowed to be built within a prescribed distance of another without a sufficient area of surrounding soil, and without the requisite appliances for subsoil drainage and ventilation. The owners of existing houses, in which these latter requisites are wanting, should be required to carry out the necessary alterations, subject to the approval of the sanitary authorities.

6. "Now, as the law stands, I do not see how the municipal authorities can effectually carry out any of these measures. The sections of the Act V (B) of 1876, 256-263, which refer to building, oblige any person, intending to build, to submit a plan, shewing level, width of foundation, and lowest floor, &c., to the Commissioners for their approval; but there appears to be no power to prohibit building, or refuse permission to lease in case of a dangerous house. Nor is any such power provided for in the section as to framing bye-laws. This defect in the law (if I am right in my view of it) ought surely to be remedied forthwith.

7. "In the next place, there ought to be a really effective official supervision of all houses used for hotels or lodgings. Every such house or hotel should be from time to time inspected by a really competent and trustworthy officer, and the owners should be compelled to put and keep these houses in a condition in which they may be inhabited without danger to human life.

8. "The present state of things, it is to be feared, leaves much to be desired. Hotels are built with a view not to comfort or health, but to the greatest number of inmates they can be made to accommodate; and the comfort and health of visitors is seriously jeopardized. The sin of overcrowding is everywhere at work. Last year a friend of mine, at one of the principal hotels, found an intolerable smell constantly present in his sitting room. The floor was taken up in search of a dead rat, but inspection proved that the smell arose from the space under the room being occupied partly by a meat larder and partly by a poultry shed. For weeks the unfortunate inmates had been living within a few feet of the filth that a godown full of fowls implies, and inhaling odours day and night. Irregularities such as this would be stopped by any proper system of inspection.

9. "Then, again, as to a subject which I have already mentioned, the improper proximity of servants' latrines and receptacles for filth. I know residents at one of the chief hotels, who have been obliged throughout this season to sit continually with closed windows on account of the bad smells thus occasioned. Can such a state of things be anything but hostile to health, and ought any hotel to be allowed to perpetuate it?

10. "To come to smaller matters. Could not something be done to obviate the inodorous heaps of house-sweepings, kitchen remains, and other unsavoury debris, which lie about, sometimes for days together, by the roadside, polluting the atmosphere and the soil, and to effect some better way of getting rid of kitchen refuse from houses, than draining it down in a black fœtid stream by the roadside. The open carts too, in which a tardy removal is effected, ought to be replaced by proper covered sewage-carts, and surely the primitive plan of pitching all the refuse of the house out into the public roadside might be replaced by some more decent arrangement. Covered iron receptacles ought to be insisted upon, and the contents ought to be removed early in the day. A walk through the bazar will convince any one of the inadequacy of the present arrangements and the disagreeable results to eye and nose. Every one of these heaps tends necessarily to the pollution of the atmosphere and the soil. What again must be the state of the sanitary arrangements of a place where, as you told me, the carcass of a newly-slain sheep can be exhibited by the side of the mall. Surely, too, the municipality could dispose of the street-sweepings, stable-dirt, &c., in some less objectionable manner than by pitching it down the mountain on the side of one of the most beautiful and favourite walks in the station. Would it not be possible to arrange for the removal of all objectionable matter by means of the tramway? Something, moreover, should be done to improve the condition of the nullah which runs down from the bazar, within a short distance of the hospital, and which at present seems to me well calculated to engender disease. When I examined it a month ago, its banks were strewn with filth, including, I remember, among other things, what looked like the hind leg of a bullock. The land in this part of the station has been allowed to be covered with lowest sorts of huts, built, apparently, without the least system or control. They are bad neighbours for a hospital. The general testimony of those whom I have consulted is, concurrent with my own, that Darjiling, despite all the exquisite beauties with which nature has endowed it, is full of ugly sights and offensive smells. On the whole, this part of the conservancy arrangements must be pronounced inadequate for the size, population and importance to which Darjiling has now attained, however well they may have answered when the station consisted of a few scattered houses.

11. "Another matter, which greatly requires reform, is the milk-supply. The experience of every one who takes a house here will, I am sure, bear me out in saying that, as matters now stand, this is a constant topic of worry, anxiety and expense. You must make the best bargain you can with the local cow-man, and if you have not the cows on your own premises, it is impossible to get unadulterated milk. On the other hand, very few houses, and none of those now in course of construction, have cow-houses, or space for grazing, and visitors are accordingly almost forced into drinking milk, as to the purity of which they have absolutely no guarantee, and which they need only look at to see that it has been tampered with. I was informed that the difficulty of getting milk has been aggravated by the greater distance at which now, owing to forest regulation, the cow men have to find pasturage, and that there has been a deterioration in the health of the children in consequence. However this may be, surely there ought to be some means of securing such an absolute necessity of health, safe from the risks caused by adulteration, or by the uncleanly fashion in which the cows are housed and kept. Could not the local Government be induced to sanction some arrangement by which milk should be supplied by some responsible company or institution, such, for instance, as Dr. Greenhill's farm? Or could not a company be formed for the purpose? The experiments at the model farm at Madras showed that milk-keeping, properly managed and on a large scale, might be made an extremely remunerative matter.

12. "Another requisite for health is a market, properly housed, with due provision for the inspection by competent experts of every article of food exposed for sale. *A propos* of this, you may be interested in the account in a *Times* of last month which I enclose, showing the results of the precautions taken in the meat market at Hamburgh. Such precautions no doubt excite the ridicule of the ignorant; but the remarkable decrease in the death-rate of English towns, where sanitary measures have been carried out, as shown at the recent Sanitary Congress, prove their substantial importance as regards the public health.

"If you can take any action with a view to remedying the shortcomings which I have mentioned, you will be conferring a great and lasting public benefit. At present the residents of Calcutta have the really inestimable benefit of a delightful sanitarium within a few hours' easy journey. The admirable institution about to be opened, within whose hospitable halls I found—thanks to the kindness of the authorities—a welcome refuge, will bring within the reach of every invalid the delightful possibility of that best and pleasantest of all remedies—residence in a delicious climate, cool atmosphere, refreshing breezes, and lovely scenery. But these advantages may easily be neutralized by negligence or stupidity.

14. "Darjiling ought, I maintain, to be kept not only up to a decent average of healthiness, but at a standard as high as money, care and knowledge can provide. The invalids and children who repair thither ought to have every possible chance of health and enjoyment, and a standard ought to be set to other localities of the way in which such matters ought to be conducted.

"It will, indeed, be a matter of regret if all its natural advantages are marred by our neglect of precautions, which it is so easy to take, and the efficiency of which experience has so amply attested."

Action taken on the suggestions made—

In paragraph 3.—The Commissioners believe that greater activity in administering the sanitary clauses of the municipal laws has been shown lately, and they consider that the sub-division of the town into wards, and the appointment of a paid Vice-Chairman, will still further improve matters. They have further directed the re-issue of the hand-book of conservancy sections and bye-laws to all house occupiers at the commencement of the season.

In paragraph 4.—The Commissioners have already made suggestions as to amendment of the Municipal Act necessary to protect trees.

In paragraph 7.—Provision has been made for a Nuisance Inspector for the eight months of the season, and steps taken to secure a house to house inspection to ascertain their sanitary condition.

In paragraph 10.—The Commissioners propose to ask Government to give the aid, among other things, towards the erection of a market shed. They think it probable that Government will before sanctioning this project, consult the Sanitary Commissioner in the matter. They state that most of the offal is readily taken by Bhuteas, and the rest is removed by natural scavengers.

In paragraph 11.—Some horse troughs have been already constructed. Rules against indiscriminate washing of clothes have been made, and prosecutions for breach of these rules are frequent. The question regarding the extension of the water-supply to the Bhootea busti was, among others, to be submitted to Government for consideration. As to its extension to the jail, the Commissioners have nothing to do with it, except give their sanction to the proposal, and this was given in 1881.

In paragraph 12.—They report that the only private burial-ground known has been registered; that the suggestion for the cremation or burial of persons dying in the small-pox hospital will be adopted; that the same precautions will be observed in cases of other contagious diseases, if considered necessary by the Civil Surgeon; and that it is unnecessary to adopt registration at burning and burial places.

In paragraph 14.—The Commissioners believe that the Deputy Commissioner has already drawn the attention of European residents to the law as to registration, and they intend that the police shall again receive instructions as to registration of births and deaths generally.

Baranagore.—*Inspected in November.*—The sanitary condition of this town was found to be very unsatisfactory. The drainage is most defective and appears to be daily becoming worse. The Railway embankments to the east of the Municipality are accused of not being provided with sufficient waterway to permit of efficient drainage eastward. The site at present used as a burning ghât is most objectionable. There is no place for the interment of human remains, and no arrangements appear to exist for the disposal of dead animals. No provision of any kind is made for maintaining, even moderately, wholesome sources of drinking water. There is not any conveniently situated public institution for the treatment of the indigent sick.

The suggestions were:—(1) To address the Railway authorities with the view of their adopting measures to improve the drainage eastward, such representation being supported by carefully collected data and a correct survey with levels. (2) To construct a platform of sufficient area, above the level of the highest known rise in the river, protected by retaining walls and provided with suitable screen walls to be used as a burning ghât. (3) To bury all dead animals, setting apart a piece of land for the purpose, if necessary. (4) To provide a place of interment for the Mahomedans. (5) To specially select, for drinking purposes, only tanks in convenient situations, removed from the vicinity of latrines, or other sources of contamination; to raise the borders of these tanks sufficiently high, so as to prevent drainage into them; to induce the population to take an intelligent interest in maintaining those tanks free from pollution, and to use them, and them only, for drinking purposes; and to prevent the growth of weeds, rushes and rank grass on the edges of the water, as also to remove all decomposing vegetable matter—growing aquatic plants being, however, allowed to remain, as these are beneficial. (6). To erect a conveniently situated public institution for the treatment of the indigent sick. (7) to devote an adequate share of the income of the town to its sanitary interests.

Action taken on the suggestion:—It was reputed that arrangements had been made for a detailed survey, with levels, of the town, with the view of addressing Government for a loan to carry out a drainage scheme on a comprehensive scale, a sum of Rs. 1,000 having been provided in the Budget for a map of the Municipality; that it was resolved that Rs. 3,000 be allotted for improving the burning ghât, and that a plot of land, not exceeding 10 cottahs in area, be set aside in each of the five wards of the town for the burial of dead animals; that the Vice-Chairman had been requested to select a site between Belghoria and Palparah for a Mahomedan burial-ground, to arrange, in consultation with the owners of tanks, for setting apart one tank in each ward for drinking purposes, and to communicate with the Chairman of the Calcutta Corporation with the view of erecting eight hydrants along the Grand Trunk Road in connection with the water-works; that an Inspector of Nuisances be appointed; and that two sites, of five beegahs each, be selected for depositing stable refuse and bazar-sweepings.

Mozufferpore.—*Inspected in December.*—The chief wants in this town are a good water-supply, and a proper system of drainage. The conservancy arrangements are more satisfactory than those obtaining in many other towns.

The suggestions were:—(1) To provide a good water-supply and a proper system of drainage (2) To allot a smaller portion of the income for the maintenance of roads, which have already received sufficient attention and are in good condition. (3) To reconsider the proposition to introduce the Latrine Act, which had been vetoed on what appears to be insufficient grounds (4) To check the practice of urinating in the drains. (5) To increase the strength of the conservancy establishment. (6) To establish more public latrines, particularly near the kutcheries and markets. (7) To cause the private privies to be attended to by municipal mehters. (8) To provide funds, now that the municipality has been relieved of the cost of the police, for giving effect to the proposal made in the last Inspection Report to introduce water from the Gunduck river into the tanks throughout the town. (9) To endeavour to overcome the prejudices of the people against using river water. (10) To submit to Government for sanction, through the Commissioner of the Division, the proposal to bring into operation the law rendering vaccination compulsory. (11) To rectify the sanitary defects in Poorana Bazar especially in Babbantoli. (12) To take steps at once to fully utilize the provisions of the Compulsory Registration Act, and to enforce its penal clause systematically.

Action taken on the suggestions :—Not yet reported.

F. W. A. de FABECK,
Offg. Sanitary Commissioner for Bengal.

Office of the Sany. Commr. for Bengal,
The 10th June 1883.

APPENDIX No. IX.

STATEMENTS EXHIBITING PARTICULARS REGARDING THE VACCINE OPERATIONS OF THE YEAR 1882-83 AND OTHER INFORMATION CONNECTED THEREWITH.

STATEMENT No. I—*Showing particulars of Vaccination*

Number.	Circles and Districts.	Population according to Census of 1881.	Average population per square mile.	Average number of Vaccinators employed throughout the season.	Total Number of Persons Vaccinated. Males.	Females.	Total.	Average number of persons vaccinated by each Vaccinator.	Primary Vaccination. Total. Males.	Females.	Total.	Successful. Under 1 year.	1 year and under 6.
1	2	3	4	5	6			7	8			9	10
	Calcutta Circle of Superintendence.												
1	Calcutta Town ...	433,219	8	14	6,506	4,867	11,373	812	4,866	4,207	9,073	2,504	5,065
	Metropolitan Circles of Superintendence.												
1	Burdwan ...	1,335,905	2,671	23	13,221	12,654	25,875	1,125	13,221	12,654	25,875	2,292	17,620
2	Bankura ...	960,040	2,398	22	10,361	9,828	20,189	217	10,361	9,828	20,189	2,113	13,459
3	Birbhum ...	786,580	1,755	15	5,122	5,057	10,179	678	5,122	5,057	10,179	677	6,443
4	Midnapore ...	2,194,032	4,584	44	29,923	26,625	56,548	1,285	29,901	26,619	56,520	7,268	35,173
5	Hughli ...	887,737	1,184	21	10,975	10,456	21,431	1,020	10,877	10,396	21,273	2,420	15,162
6	Howrah ...	629,758	165	11	8,623	8,313	16,936	1,539	8,622	8,313	16,935	2,353	12,488
7	24-Pergunnahs ...	1,148,464	2,017	45	20,524	19,688	40,212	893	20,524	19,688	40,212	4,495	29,106
8	Nuddea ...	1,922,401	3,102	34	25,370	23,353	48,723	1,433	25,354	23,344	48,698	3,798	34,953
9	Jessore ...	1,545,384	2,176	33	17,965	17,045	35,010	1,060	17,964	17,043	35,007	3,471	24,756
10	Khoolna ...	1,070,508	2071	28	18,258	17,066	35,324	1,261	18,253	17,066	35,319	2,515	17,789
11	Murshidabad ...	1,092,744	6,230	30	17,513	16,238	33,751	1,124	17,513	16,238	33,751	2,238	23,137
	Total	13,762,548	28,976	306	177,855	166,323	344,178	1,124	177,712	166,246	343,958	33,635	232,091
12	Suburbs of Calcutta, including Cooly Depôts	251,439	23	10	9,210	5,942	15,152	1,515	4,638	3,666	8,304	1,429	5,439
	TOTAL OF METROPOLITAN CIRCLES	14,013,987	28,999	316	187,065	172,265	359,330	1,137	182,350	169,912	352,262	35,064	237,530
	Darjiling Circle of Superintendence.												
1	Dinagepore ... By licensed vaccinators	1,501,369	4,112	30	16,249	14,585	30,834	1,027	16,247	14,585	30,832	5,150	21,506
2	Maldah ... By licensed ditto	698,018	1,889	4	2,338	2,155	4,493	1,123	2,338	2,155	4,493	1,418	2,105
	By paid ditto			42	40,050	36,796	76,846	1,829	40,031	36,783	76,814	8,853	48,510
3	Rajshahye ... By licensed ditto	1,318,847	2,856	31	22,120	20,670	42,790	1,380	22,116	20,676	42,792	6,032	29,518
4	Rungpore ... By licensed ditto	2,084,644	3,180	32	24,176	22,432	46,608	1,456	24,176	22,432	46,608	6,952	34,787
5	Bogra ... By licensed ditto	728,179	1,407	17	10,232	10,094	20,326	1,195	10,231	10,093	20,324	3,857	15,451
6	Darjiling ... By paid ditto	148,161	1,229	5	4,095	3,118	7,213	1,442	4,095	3,118	7,213	709	2,234
	By licensed ditto			2	692	609	1,301	650	692	609	1,301	375	762
7	Julpaiguri ... By licensed ditto	573,615	2,881	17	8,673	8,179	16,852	991	8,669	8,173	16,842	7,255	8,444
8	Purneah ... By paid ditto	1,833,071	4,917	1	94	93	187	187	94	93	187	13	168
	By licensed ditto			32	18,933	15,902	34,835	1,088	18,920	15,898	34,818	11,588	20,463
	Total .. By paid ditto	8,580,504	22,361	48	44,239	40,007	84,246	1,755	44,220	39,994	84,214	9,575	51,212
	By licensed ditto			165	103,413	94,632	198,045	1,200	103,389	94,621	198,010	44,586	133,126
	TOTAL OF DARJILING CIRCLE			213	147,652	134,639	282,291	1,325	147,609	134,615	282,224	54,161	184,338
	Ranchi Circle of Superintendence												
1	Manbhum ... By licensed vaccinators	177,499	707	59	16,136	14,695	30,831	522	16,136	14,695	30,831	10,904	16,486
2	Singhbhum ... By paid ditto	205,662	1,915		557	484	1,041		416	336	752	107	239
	By licensed ditto			12	4,110	4,119	8,229	685	3,256	3,331	6,587	1,330	4,190
3	Hazaribagh By paid ditto	719,534	1,349		12,469	12,090	24,559	...	12,469	12,090	24,559	4,301	16,047
	By licensed ditto			.	144	141	285	..	144	141	285	85	171
4	Lohardugga By paid ditto	705,403	1,867		606	623	1,229	...	606	623	1,229	205	883
	By licensed ditto			31	12,767	12,816	25,583	655	12,767	12,816	25,583	4,570	18,776
6	Political states .. By licensed ditto	468,516	10,556	36	9,631	9,505	19,136	531	9,631	9,505	19,136	2,789	13,290
	Total By paid ditto	2,276,652	22,307	39	13,632	13,197	26,829	697	13,491	13,049	26,540	4,613	17,102
	By licensed ditto			146	42,788	41,276	84,064	575	41,934	40,488	82,422	19,692	52,911
	TOTAL OF RANCHI CIRCLE			185	56,420	54,473	110,893	599	55,425	53,537	108,962	24,305	70,073
	Sonthal Pergunnahs Circle of Superintendence												
1	Sonthal Pergunnahs ... By paid vaccinators	1,560,088	5,451	7	91	79	170	24	91	79	170	18	108
	By licensed ditto			39	35,859	35,617	71,476	1,832	35,854	35,615	71,469	5,135	54,009
2	Bhagulpore ... By paid ditto	1,711,875	3,919	46	27,499	25,553	53,052	1,153	27,480	25,543	53,023	3,185	43,292
3	Monghyr ... By paid ditto	993,396	2,560	18	5,401	4,472	9,873	548	5,401	4,472	9,873	466	7,942
	Total By paid ditto	4,265,359	11,930	71	32,991	30,104	63,095	888	32,972	30,094	63,066	3,669	51,342
	By licensed ditto			39	35,859	35,617	71,476	1,832	35,854	35,615	71,469	5,135	54,009
	TOTAL OF SONTHAL PERGUNNAHS CIRCLE			110	68,850	65,721	134,571	1,223	68,826	65,709	134,535	8,804	105,351
	Eastern Bengal Circle of Superintendence.												
1	Mymensing By paid vaccinators	1,682,200	3,549	53	51,740	47,355	99,095	1,869	51,732	47,353	99,085	5,641	45,956
	By honorary ditto				5,479	4,798	10,277		5,479	4,798	10,277	612	5,253
2	Faridpore ... By paid ditto	1,631,731	2,267	6	161	131	292	48	161	131	292	18	208
	By licensed ditto			53	18,640	18,034	36,674	691	18,631	18,028	36,659	3,693	24,201
3	Noakholi ... By paid ditto	624,344	1,249	9	794	646	1,440	160	756	635	1,391	91	651
4	Dacca ... By paid ditto	2,023,628	2,791	8	98	82	180	22	98	82	180	11	103
	By licensed ditto			63	21,293	20,351	41,644	661	21,262	20,332	41,594	3,552	27,215
5	Pubna ... By licensed ditto	1,298,161	1,845	33	27,303	25,613	52,916	1,603	27,300	25,612	52,912	7,108	37,969
	Total ... By paid ditto	7,258,367	11,701	76	52,793	48,214	101,007	1,329	52,747	48,201	100,948	5,761	46,918
	By licensed ditto			119	72,715	68,796	141,511	973	72,672	68,770	141,442	14,965	94,633
	TOTAL OF EASTERN BENGAL CIRCLE			225	125,508	117,010	242,518	1,077	125,419	116,971	242,390	20,726	141,551
	Orissa Circle of Superintendence.												
1	Cuttack ... By paid vaccinators	1,353,148	2,895	.	19,269	15,354	34,623	......	19,261	15,345	34,606	8,076	27,384
2	Balasore ... By paid vaccinators	697,635	4,724	.....	1,189	945	2,134	.. ..	1,189	945	2,134	37	1,785
3	Poori ... By paid vaccinators	496,260	908	. .	3,726	3,375	7,101	......	3,726	3,375	7,101	662	4,740
	TOTAL OF ORISSA CIRCLE	2,457,043	8,527	33	24,184	19,674	43,858	1,329	24,176	19,665	43,841	8,775	33,909
	Behar Circle of Superintendence.												
1	Patna ... By paid vaccinators	1,605,343	1,009	......	8,622	8,762	17,384	......	8,604	8,749	17,353	1,488	14,893
2	Gya ... By paid vaccinators	274,754	352	...	57	46	103	.. ..	57	46	103	1	93
	TOTAL OF BEHAR CIRCLE	1,880,097	2,291	35	8,679	8,808	17,487	499	8,661	8,795	17,456	1,489	14,986
	Grand Total of all Circles ... By paid vaccinators	.	.	326	192,234	170,813	363,047	1,113	185,771	167,671	353,442	31,763	226,628
	By licensed ditto	......	...	805	432,630	406,644	839,274	1,042	431,561	405,740	837,301	118,013	566,775
	TOTAL	41,471,228	108,220	1,131	624,864	577,457	1,202,321	1,067	[illegible]	573,411	1,190,743	149,776	793,403

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th June* 1883.

in each Circle of Superintendence during the year 1882-83.

...ful. Above 6 years.	...ful. Total at all ages.	Re-vaccination. Total. Males.	Re-vaccination. Total. Females.	Re-vaccination. Total. Total.	Re-vaccination. Successful. Under 1 year.	Re-vaccination. Successful. 1 year and under 6.	Re-vaccination. Successful. Above 6 years.	Re-vaccination. Successful. Total at all ages.	Percentage of successful cases. Primary.	Percentage of successful cases. Re-vaccination.	Religion of the number vaccinated. Total number vaccinated of— Hindus.	Mahomedans.	Christians.	Other races.	Persons successfully vaccinated per 1,000 of population.	Average annual number of persons successfully vaccinated during previous five years. Number.	Ratio per 1,000 of population.	Average number of deaths from small-pox during previous five years. Number.	Ratio per 1,000 of population.
11	12	13			14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
847	9,016	1,640	660	2,300	...	...	287	287	99·37	12·47	6,672	3,890	736	75	21·47	7,325	16·00	516	1·19
5,942	25,854	......	......	......	...	...	......	......	99·91	......	22,720	3,145	1	......	19·35	......	......	207	·15
4,555	20,127	......	......	......	...	...	......	......	99·69	......	19,719	469	1	...	20·77	......	......	138	·14
3,037	10,157	......	......	......	...	..	......	......	99·78	......	7,365	1,070	2	1,742	12·91	......	......	23	·02
13,893	56,334	22	6	28	...	1	18	19	99·69	70·37	54,742	1,801	5	......	25·68	......	......	1,404	·63
3,672	21,254	98	60	158	...	4	146	150	99·99	94·93	18,603	2,828	...	...	24·24	......	......	90	·11
2,083	16,024	1	......	1	...	...	1	1	99·93	100·	14,207	2,729	...	......	31·94	......	......	143	·26
6,591	40,192	......	......	......	...	...	......	......	99·94	......	26,143	13,963	106	......	27·84	......	......	130	·09
7,748	48,504	16	9	25	...	3	11	14	99·73	56·00	19,882	28,621	180	40	25·23	......	......	254	·13
6,596	34,823	1	2	3	...	...	3	3	99·48	100·	14,977	20,027	6	......	22·68	......	......	119	·07
14,863	85,167	5	...	5	...	...	5	5	99·59	100·	22,798	12,522	4	......	32·85	......	......	......	......
8,334	33,704	......	......	......	...	..	......	......	99·87	......	14,791	18,783	...	177	30·84	......	......	73	·06
77,314	343,040	143	77	220	...	8	184	192	99·76	87·67	235,956	105,958	305	1,959	24·93	242,415	17·61	2,580	·18
1,432	8,300	4,572	2,276	6,848	..	109	1,537	1,646	99·96	26·68	11,593	3,395	164	....	39·55	7,499	29·82	304	1·20
78,746	351,340	4,715	2,353	7,068	...	117	1,721	1,838	99·76	28·77	247,549	109,353	469	1,959	25·20	249,914	17·83	2,890	·20
3,753	30,418	2	......	2	..	...	2	2	99·50	100·	12,806	16,065	...	1,963	20·26	......	......	65	·04
867	4,480	......	......	......	...	...	......	......	99·73	...	2,765	1,709	...	19	6·41	......	......	} 85	·12
18,051	76,614	19	13	32	1	7	23	31	99·78	96·87	36,244	38,723	2	1,877	100·80	......	......		
4,080	42,530	4	......	4	...	...	4	4	95·75	100·	22,727	18,478	...	1,591	32·24	......	......	29	·02
4,600	46,339	......	......	......	...	...	......	......	99·81	......	15,913	29,389	...	1,308	22·22	......	......	723	·34
1,015	20,323	1	1	2	...	...	1	1	100·	50·	3,010	17,086	...	230	27·91	......	......	4	·005
3,888	6,851	......	......	......	...	...	......	......	99·78	......	6,888	81	1	213	46·10	......	......	} 17	·11
160	1,297	......	......	......	...	...	......	......	99·92	......	1,152	93	...	56	8·75	......	......		
973	16,672	4	6	10	...	7	3	10	99·74	100·	9,961	6,173	2	716	29·08	......	......	128	·22
5	180	......	......	......	...	...	......	......	99·46	...	162	9	...	16	·10	......	......	} 200	·10
2,734	34,735	13	4	17	...	11	1	12	99·88	70·58	17,803	14,754	2	2,186	18·04	......	......		
22,844	83,631	19	13	32	1	7	23	31	99·78	96·87	43,294	38,818	3	2,136	9·41	} 144,636	16·27	1,251	·14
19,082	196,794	24	11	35	...	18	11	29	99·77	82·85	86,227	103,747	4	8,067	22·14				
41,926	280,425	43	24	67	1	25	34	60	99·78	89·55	129,521	142,560	7	10,203	31·56				
926	28,315	......	......	......	...	...	......	......	92·05	......	24,496	1,026	...	5,309	159·53	......	......	34	·19
43	382	141	148	280	...	6	45	51	88·22	41·46	781	27	13	220	2·10	......	......	} 14	·76
443	5,972	854	788	1,642	14	375	999	1,388	92·14	88·69	4,605	5	4	3,615	35·81	......	......		
1,740	22,088	......	......	......	...	...	......	......	91·13	......	22,683	1,700	3	173	30·83	......	......	} 110	·15
14	270	......	......	......	...	...	......	......	96·42	......	276	5	...	4	·37	......	......		
16	1,104	......	......	......	...	...	......	......	92·38	......	575	47	17	590	1·56	......	......	} 812	1·15
453	23,804	......	......	......	...	...	......	......	94·29	......	9,587	714	641	14,641	33·74	......	......		
916	16,904	......	......	......	.	..	......	......	89·41	......	13,551	53	1	5,531	36·27	......	......	......	......
1,799	23,574	141	148	289	...	6	45	51	93·95	41·46	24,039	1,774	33	983	10·37	} 172,436	75·74	970	·42
2,752	75,355	854	788	1,642	14	375	999	1,388	92·15	88·69	52,515	1,803	646	29,100	33·70				
4,551	98,929	995	936	1,931	14	381	1,044	1,439	92·57	85·13	76,554	3,577	679	30,083	41·07				
38	164	......	......	......	...	...	......	......	98·79	......	66	81	...	23	·10	......	......	} 183	·11
12,030	71,174	5	2	7	...	2	4	6	99·70	85·71	26,340	3,929	50	41,157	45·62	......	......		
6,388	52,865	10	10	20	...	3	12	15	99·83	51·72	42,248	3,066	9	7,129	30·89	......	......	697	·40
1,441	9,849	......	......	......	...	...	......	......	99·77	...	7,609	637	2	1,565	9·91	......	......	889	·89
7,867	62,878	19	10	29	...	3	12	15	99·82	51·72	49,983	4,384	11	8,717	14·74	} 65,778	15·42	1,769	·41
12,030	71,174	5	2	7	...	2	4	6	99·70	85·71	26,340	3,929	50	41,157	16·68				
19,897	134,052	24	12	36	...	5	16	21	99·75	58·33	76,323	8,313	61	49,874	31·43				
47,217	98,614	8	2	10	...	...	10	10	99·78	100·	43,983	52,637	26	2,149	58·71	......	......	} 527	·31
4,400	10,265	......	......	......	...	...	......	......	99·92	......	4,579	5,312	...	386	6·10	......	......		
49	370	......	......	......	...	...	......	......	92·77	......	86	201	...	5	·16	......	......	} 224	·13
8,150	35,044	9	6	15	...	2	10	12	98·66	80·	16,863	10,400	61	350	22·09	......	......		
633	1,875	38	11	49	...	...	20	20	98·84	40·81	210	1,221	4	5	2·23	......	......	574	·91
82	170	......	......	......	...	...	......	......	97·27	......	122	57	...	1	·08	......	......	} 138	·06
10,775	41,543	31	19	50	2	22	8	33	99·87	64·00	19,004	22,339	18	223	20·54	......	......		
7,677	52,754	3	1	4	...	1	3	4	99·82	100·	13,145	39,201	...	510	40·09	......	......	45	·03
47,901	100,635	46	13	59	...	...	30	30	99·85	50·84	44,401	54,116	30	2,440	13·86	} 297,958	41·40	1,508	·20
31,002	140,605	43	26	69	2	25	21	48	99·54	69·57	53,651	86,312	79	1,469	19·37				
78,963	241,240	89	39	128	2	25	51	78	99·62	60·93	98,052	140,428	109	3,920	33·24				
3,136	32,596	8	9	17	17	...	......	17	95·39	100·	34,365	249	9	......	24·10	......	......	5,212	3·85
91	1,913	......	......	......	...	...	......	......	89·64	......	2,120	14	...	......	3·14	......	......	480	·78
1,357	6,759	......	......	......	...	...	......	......	95·38	......	7,037	37	27	...	13·21	......	......	1,989	4·00
4,584	41,268	8	9	17	17	...	......	17	94·29	100·	43,522	300	36	......	16·80	42,320	17·23	7,681	3·12
725	17,056	18	13	31	...	12	15	27	98·64	90·	15,244	2,134	4	2	10·64	......	......	954	·59
9	103	......	......	......	...	...	......	......	100·	......	97	6	...	......	·37	......	......	787	2·86
734	17,159	18	13	31	...	12	15	27	98·65	90·	15,341	2,140	4	2	9·14	12,979	6·90	1,741	·93
88,068	846,461	6,465	3,143	9,608	18	137	1,949	2,104	98·61	24·08	238,845	108,812	1,017	14,373	8·10	} 993,[illegible]	23·95	18,393	·44
149,180	326,968	1,000	904	1,973	16	428	1,219	1,663	98·97	87·75	454,089	301,740	1,084	81,752	10·97				
238,248	1,172,429	7,465	4,046	11,578	34	565	3,168	3,767	98·87	35·45	693,534	410,561	2,101	96,125	28·38				

F. W. A. deFABECK,

Offg. Sanitary Commissioner for Bengal.

STATEMENT No. II.—*Showing the Cost of Vaccination in*

Number.	CIRCLES AND DISTRICTS.	ESTABLISHMENT.														EXPEN[diture]	
		Superintendents of Circles.	Deputy Superintendents.	Native Superintendents.	Inspectors of licensed vaccinators.	Total.	Vaccinators. Head vaccinators.	First class vaccinators.	Total.	Second and third class vaccinators.	Apprentices.	Total.	Clerks.	Menial servants.	Total.	Pay of establishment.	Travelling allowance.
1	2	3	4	5			6			7			8			9	10
																Rs. A. P.	Rs. A. P.
1	Calcutta	1	1	...	...	2	3	3	6	8	...	8	...	1	1	4,508 0 0	300 0 0
2	Metropolitan Circles ...	1	4	...	39	44	...	...	...	...	...	...	3	6	9	29,599 10 2	6,033 13 9
3	Suburbs of Calcutta ...	...	1	...	...	1	3	3	6	7	...	7	...	...	...	4,212 0 0	360 0 0
	TOTAL OF METROPOLITAN CIRCLES.	1	5	..	39	45	3	3	6	7	...	7	3	6	9	33,811 10 2	6,393 13 9
4	Darjiling Circle	1	2	7	7	17	1	15	16	31	39	70	2	5	7	23,006 9 7	2,460 1 6
5	Ranchi "	1	1	3	4	9	...	...	...	39	...	39	1	2	3	9,893 7 5	1,364 13 9
6	Sonthal Pergunnahs Circle.	1	1	6	4	12	3	11	14	48	...	48	...	1	1	6,401 11 9	1,339 12 2
7	Eastern Bengal Circle ...	1	1	...	2	4	6	23	29	41	22	63	1	2	3	9,089 5 9	1,175 14 9
8	Orissa Circle	1	...	...	...	1	3	10	13	17	3	20	1	1	2	5,143 8 10	1,050 10 3
9	Behar "	1	...	...	...	1	5	3	8	24	3	27	1	1	2	5,020 9 4	978 12 2
	GRAND TOTAL ...	8	11	16	56	91	24	68	92	215	67	282	9	19	28	97,594 14 10	15,138 14 4

STATEMENT No. III.—*Showing particulars of Vaccination performed by Vaccinators attached*

DISTRICT.	Number of Municipalities, Dispensaries, &c., in the district to which vaccinators were attached.	Number of Vaccinators attached to the Municipalities, Dispensaries, &c., in the district during the season.	TOTAL NUMBER OF PERSONS VACCINATED. Males.	Females.	TOTAL.*	Average number of persons vaccinated by each Vaccinator.	PRIMARY VACCINATION. Total. Males.	Females.	TOTAL.	Successful. Under one year.	One and under six years.	Above six years.	TOTAL OF ALL AGES.
Burdwan	6	5	1,223	1,095	2,318 I	463	1,178	1,072	2,250	314	1,153	747	2,214
Bankura	2	2	658	620	1,278 I	639	588	578	1,166	128	861	147	1,136
Birbhum	1	1	81	46	127 D	127	81	46	127	3	28	53	84
Midnapore	1	1	352	188	540 D	540	351	188	539	170	132	223	525
Hughli	3	3	1,062	732	1,794 I	508	1,008	704	1,712	185	957	484	1,626
Serampore	5	2	750	582	1,332 I	666	722	557	1,279	236	757	215	1,208
Howrah	1	5	2,471	2,112	4,583 D	916	2,400	2,070	4,470	612	3,150	707	4,469
24-Pergunnahs	10	11	1,660	1,265	2,925 D	266	1,590	1,257	2,847	464	1,636	713	2,813
Nuddea	3	7	477	438	915 I	130	454	415	869	32	594	241	867
Jessore	1	1	46	.....	46 D	46	38	......	38	.....	.....	28	28
Khoolna	1	1	8	.....	8 I	8	6	.....	6	.....	.....	4	4
Murshidabad	5	7	1,325	789	2,114 D	302	1,105	712	1,817	133	957	601	1,691
Dinagepore	2	1	118	97	215 D	215	116	95	211	18	58	82	158
Rajshahye	4	2	275	125	400 D	200	217	124	341	34	173	118	325
Rungpore	2	1	159	95	254 I	254	159	95	254	57	109	83	249
Bogra	5	4	212	187	399 D	396	208	180	388	58	250	50	358
Darjiling	4	5	869	737	1,606 D	321	869	737	1,606	405	224	977	1,606
Julpaiguri	1	1	21	...	21 I	21	21	.....	21	......	......	9	9
Dacca	2	4	861	678	1,539 I	384	860	672	1,532	203	886	373	1,462
Faridpore	1	1	842	515	1,357 D	1,357	842	515	1,357	2	9	41	52
Backergunge	1	2	368	75	443 D	221	280	68	348	7	40	221	268
Mymensing	2	2	540	451	991 I	495	540	451	991	75	368	316	759
Tipperah	6	5	1,922	1,694	3,616 I	723	1,769	1,600	3,369	294	1,591	1,244	3,129
Chittagong	4	6	550	311	861 D	143	515	297	812	156	416	110	682
Noakholi	4	4	393	210	603 D	150	393	210	603	35	212	302	549
Patna	4	12	3,564	2,276	5,840 I	486	3,376	2,129	5,505	2,346	2,321	147	4,814
Gya	8	7	487	401	888 I	126	468	390	858	51	535	185	721
Shahabad	8	9	2,361	1,624	3,985 I	442	2,350	1,604	3,954	810	2,180	422	3,412
Mozufferpore	5	5	1,495	996	2,491 I	498	1,495	995	2,490	917	1,246	78	2,241
Durbhanga	5	6	1,294	1,010	2,304 D	384	1,284	1,008	2,292	133	1,956	36	2,125
Sarun	6	7	1,750	1,522	3,272 I	467	1,651	1,474	3,125	264	1,789	689	2,742
Chumparun	5	3	280	202	482 D	160	269	190	459	53	160	87	300
Monghyr	2	4	1,215	957	2,172 I	543	1,129	887	2,016	230	1,115	141	1,486
Bhagulpore	1	1	272	208	480 D	480	240	195	435	21	278	97	396
Purneah	1	1	234	180	414 I	414	219	173	392	121	191	68	383
Maldah	2	2	585	406	911 I	470	505	389	894	62	375	423	860
Sonthal Pergunnahs	3	2	47	52	99 D	49	46	52	98	45	41	7	93
Cuttack	6	6	895	669	1,564 D	260	828	603	1,431	152	717	207	1,076
Poori	1	2	424	304	728 I	364	420	301	721	109	275	103	547
Balasore	1	1	696	529	1,225 I	1,225	696	529	1,225	21	987	159	1,167
Hazaribagh	3	1	149	97	246 I	246	149	97	246	1	236	......	237
Lohurdugga	1	1	419	201	620 I	620	397	191	588	72	345	103	520
Singbhum	1	1	455	342	797 I	797	329	259	588	114	262	130	506
Manbhum	4	4	132	139	271 I	67	126	138	264	38	163	44	245
GRAND TOTAL ..	144	159	33,947	25,157	59,104 D	17,679	32,287	24,247	56,534	9,201	29,726	11,205	50,132

* The I and D in this column indicate increase

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th June* 1883.

each Circle of Superintendence during the year 1882-83.

DITURE.		PAID FROM—							
Contingencies.	Total cost.	Imperial Funds.	Provincial Funds.	Local Funds.	Municipalities.	Native States.	Total.	Number of successful primary and re-vaccinations.	Average cost of each successful case.
11	12	13	14	15	16	17	18	19	20
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.
458 2 10	5,380 2 10	......	2,960 0 0	......	2,426 2 10	......	5,380 2 10	9,303	0 9 3
693 13 6	36,327 5 5	36,327 5 5	......	......	..	......	36,327 5 5	343,232	0 1 8
701 0 0	5,273 0 0	2,760 0 0	......	... .	2,513 0 0	......	5,273 0 0	9,946	0 8 5¼
1,394 13 6	41,600 5 5	39,087 5 5	. ...	......	2,513 0 0	.....	41,600 5 5	353,178	0 1 10½
822 14 6	26,295 9 7	......	26,295 9 7	......	......	.. ..	26,295 9 7	280,485	0 1 6
80 15 9	11,339 4 11	......	11,099 4 11	......	......	240 0 0	11,339 4 11	100,368	0 1 9
124 0 0	7,925 7 11	......	7,925 7 11	......	......	... ..	7,925 7 11	184,073	0 0 11
257 6 3	11,122 10 9	......	11,122 10 9	......	......	......	11,122 10 9	241,818	0 0 8¾
181 7 3	6,384 10 4	6,384 10 4	. ....	......	.. .	......	6,384 10 4	41,285	0 2 5
33 0 0	6,032 5 6	6,032 5 6	......	... ..	... ..	......	6,032 5 6	17,186	0 5 7
3,352 12 1	1,16,086 9 3	51,504 5 3	59,403 1 2	.. ...	4,939 2 10	240 0 0	1,16,086 9 3	1,177,196	0 1 6¾

to Municipalities, Dispensaries, &c., in the Province of Bengal, during the year 1882-83.

RE-VACCINATIONS.							NUMBER VACCINATED AMONG—				PERCENTAGE OF SUCCESSFUL CASES.		REMARKS.
Total.			Successful.										
Males.	Females.	TOTAL.	Under one year.	One and under six years.	Above six years.	TOTAL OF ALL AGES.	Hindus.	Mahomedans.	Christians.	Other races.	Primary.	Re-vaccination.	
45	23	68	......	3	39	42	1,798	502	18	... ...	99·01	64·61	
70	42	112	......	33	60	99	1,229	49	......	......	97·42	88·39	
......	......	......	.....	.....	. ..	......	102	25	. . ..	......	75·04		
1	.. ...	1	. ....	.....	1	1	440	98	....	2	97·49	100·	
54	28	82	...	15	62	77	1,447	312	5	......	97·30	93·90	
28	25	53	1	18	33	52	1,227	84	16	5	96·10	98·11	
71	42	113	......	6	76	82	3,298	1,190	95	......	99·97	72·56	
70	8	78	......	......	39	39	2,255	598	79	5	99·04	51·31	
23	23	46	......	8	1	9	680	232	1	2	99·76	19·56	
8	......	8	......	......	6	6	18	28	......	......	73·68	75·	
2	......	2	......	......	2	2	3	5	......	......	66·66	100·	
220	77	297	......	31	123	154	1,115	925	5	69	95·16	68·11	
2	2	4	... ..	......	4	4	83	103	1	29	80·20	100·	
58	1	60	......	......	42	42	212	165	3	20	99·09	76·36	
......	......	......	... ..	.. ...	......	......	122	195	2	5	98·11	...	
4	7	11	......	4	4	8	210	188	1	.....	92·26	72·72	
......	......	......	......	... ..	......	......	909	15	233	449	100·	......	
.....	......	......	......	......	......	.....	11	10	......	. ...	42·85	. ..	
1	6	7	......	2	4	6	980	513	16	.	97·20	85·71	
......	... .	... .	.....	......	......	.. ..	908	256	.. . .	195	51·73	.	
88	7	95	2	16	62	80	301	66	12	4	84·27	90·90	
......	......	......	......	......	......	.... .	226	657	.... .	108	77·84		
153	94	247	2	50	91	143	1,413	2,169	8	26	92·87	57·89	
35	14	49	......	7	12	19	189	671	35	66	88·	44·18	
......	......	......	......	......	......	......	253	348	2	......	95·14	. ...	
188	147	335	......	233	78	311	3,400	2,210	230	......	91·55	92·83	
19	11	30	7	10	6	23	678	202	4	4	85·32	79·31	
11	20	31	1	7	13	21	2,455	1,342	23	165	88·02	67·74	
......	1	1	......	1	......	1	1,775	633	13	70	90·65	100·	
10	2	12	......	5	4	9	1,843	379	10	72	95·07	75·	
99	48	147	1	101	30	132	1,919	1,224	9	120	91·95	89·79	
11	12	23	......	9	5	14	350	90	9	33	72·99	63·63	
86	70	156	......	22	45	67	1,777	338	25	32	75·77	42·94	
33	13	45	......	4	25	29	274	169	18	19	91·65	64·44	
15	7	22	......	2	14	16	160	74	10	161	97·95	76·19	
30	17	47	......	20	18	47	644	297	......	......	96·19	100·	
1	......	1	......	......	1	1	62	8	4	25	94·80	100·	
67	66	133	3	30	27	60	1,305	95	157	7	80·70	60·	
4	3	7	1	1	2	4	724	2	2	... .	86·41	57·14	
......	......	......	......	......	......	......	1,103	122	... ..	......	95·26	......	
......	......	......	......	......	......	......	172	74	......	...	96·34	..	
22	10	32	......	7	2	9	142	100	95	283	94·54	34·61	
128	68	200	1	6	99	106	381	112	48	256	90·84	52·21	
6	1	7	......	1	5	6	223	34	5	9	95·91	100·	
1,660	910	2,570	19	670	1,041	1,730	38,874	16,787	1,203	2,240	92·77	69·70	

and decrease as compared with 1881-82.

F. W. A. DEFABECK,

Offg. Sanitary Commissioner for Bengal.

COMPARATIVE STATEMENT NO. IV.—*Showing the number of Persons Primarily Vaccinated and the number of those Persons who were Successfully Vaccinated in each of the undermentioned official years.*

Establishment.	Persons primarily vaccinated. Years ended 31st March									
	1873-74.		1874-75.		1875-76.		1876-77.		1877-78.	
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
Government	558,053	542,989	701,388	682,606	746,223	728,400	1,079,945	1,061,923	888,622	875,139
Municipal	62,895	58,061	68,880	63,205	59,707	53,905	84,831	79,411	86,875	80,467
Local funds	172	165	174	115	307	294	978	883	1,148	930
Native States	1,267	1,083	569	477	1,965	1,740	3,362	3,073	3,010	2,512
Dispensaries	19,208	16,598	22,670	20,183	15,243	13,120	20,010	17,798	22,919	20,628
Work done by ex-inoculators.	101,069	73,633	152,290	113,719	245,355	202,234	296,610	254,451	238,226	205,820
TOTAL ...	742,864	692,469	945,971	880,308	1,068,800	999,693	1,485,956	1,447,537	1,240,800	1,185,496

Establishment.	Persons primarily vaccinated. Years ended 31st March									
	1878-79.		1879-80.		1880-81.		1881-82.		1882-83.	
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
Government	506,487	493,020	616,343	604,111	898,800	888,266	831,485	823,212	680,028	672,185
Municipal	73,146	67,683	65,395	56,847	53,632	49,627	62,588	59,403	61,951	58,250
Local funds	1,354	1,053	1,709	1,426	526	469	355	350	......	......
Native States	3,329	2,9[illegible]	3,900	3,156	4,462	3,981	1,374	1,213	19,136	16,994
Dispensaries	10,475	9,292	8,956	7,805	3,580	2,846	6,027	5,532	11,329	9,580
Work done by ex-inoculators.	683,009	665,453	1,021,130	1,008,651	422,763	414,178	437,619	425,490	474,207	466,934
TOTAL ...	1,276,800	1,239,455	1,717,433	1,681,996	1,383,763	1,359,267	1,339,448	1,315,199	1,246,646	1,223,943

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15th June 1883.

F. W. A. DEFABECK,
Offg. Sanitary Commissioner for Bengal.

A.

Statement showing the deaths from Small-pox during the year 1882-83 IN THE THANNAHS IN WHICH VACCINATION WAS PERFORMED.

Circles.	Districts.	Thannahs.	Population.	April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.	Total.	Ratio of deaths per 1,000 of population.
	Calcutta ...	....	433,219	2	2	5	2	2		...	...	2	2	15	21	53	·12
Metropolitan Circles.	Burdwan ...	Culna	81,583	...	...	...	...	...	...	...	...	...	...	...	...	...	
		Montessur	63,053	...	...	...	...	...	...	...	...	...	...	...	...	...	
		Gangoor	102,748	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Cutwa	82,943	...	...	...	...	...	...	...	5	2	1	...	...	8	·09
		Mungolecote	73,543	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Purbasthalli	82,070	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shahebgunge	75,171	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranigunge	135,646	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Assensole	98,842	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaksa	38,989	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ausgram	97,311	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bood-Bood	79,073	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Royna	97,190	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Burdwan	27,330	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khoudghose	54,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Selimabad	71,709	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ketugram	73,723	...	...	...	...	...	...	...	...	3	15	10	15	43	·58
	Bankura ...	Raipur	95,802	...	5	2	1	...	...	...	...	...	...	...	...	8	·08
		Bishenpur	119,595	2	1	...	...	...	...	...	...	...	...	...	...	3	·02
		Kotulpur	94,964	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ondah	110,321	...	...	...	...	...	1	...	...	...	...	...	...	1	·008
		Soopole	90,122	3	2	2	...	...	...	...	...	...	...	...	...	7	·07
		Gungajulghatti	172,607	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bankura	108,804	...	...	9	3	...	1	...	...	...	...	...	...	13	·11
		Indus	78,809	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sonamukhi	80,016	2	...	...	1	...	...	...	...	...	2	2	...	7	·08
	Birbhum ...	Sakulipur	122,723	...	...	...	...	...	...	...	...	...	...	...	1	1	·008
		Rampurhat	87,774	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nulhati and Pulsa	133,597	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bolepore	107,893	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Doobrajpore	126,566	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Soori	118,891	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Moureswar	88,836	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Midnapore ...	Sootahatta	54,624	50	35	49	31	24	7	3	5	4	...	...	...	208	3·80
		Muslundpur	80,569	1	4	3	4	2	5	...	5	1	1	3	5	33	·40
		Gopibullubpore	139,928	...	...	...	1	3	...	...	...	...	...	1	...	4	·03
		Pauskurah	142,081	3	...	2	3	1	...	...	2	...	...	2	...	13	·09
		Nundigram	121,895	...	4	4	3	1	...	1	...	...	...	1	...	14	·11
		Salboni	53,617	...	...	...	...	...	...	4	...	...	...	...	...	4	·07
		Binpur	90,704	7	13	1	...	1	...	2	...	1	...	...	...	25	·27
		Midnapur	128,546	1	...	...	...	...	...	...	...	...	...	...	...	1	·007
		Sabong	201,714	15	20	11	6	8	5	2	1	...	...	1	3	72	·35
		Contai	130,554	...	...	...	...	...	...	...	1	1	...	2	1	5	·03
		Gurbetta	138,023	...	4	1	...	...	1	...	...	...	...	...	...	6	·04
		Bhogbanpur	96,451	4	12	15	4	2	3	1	...	...	...	...	...	41	·42
		Dantoon	128,447	2	...	...	...	...	...	...	...	1	...	7	1	11	·08
		Tumlook	80,049	8	3	4	...	...	2	4	...	1	1	...	...	23	·28
		Chunderkona	77,062	...	1	...	...	...	...	...	...	...	1	...	...	2	·02
		Keshpur	95,609	1	...	3	6	...	...	...	...	...	...	...	...	10	·10
		Ghatal	84,093	...	1	...	1	...	...	...	...	...	...	...	...	2	·02
		Debrah	70,198	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Egra	63,417	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pataspur	87,324	...	1	3	1	2	...	...	...	...	...	1	2	10	·11
		Narainghur	129,199	...	...	...	...	...	...	...	...	...	2	...	...	2	·01
	Hughli and Serampore.	Haripal	84,933	...	...	...	...	...	...	...	...	...	...	...	...	...	
		Krishnagore	55,107	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chanditola	84,367	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hughli	15,458	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Polbah	46,173	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pundooah	66,113	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Bulagore	48,218	...	1	...	...	...	...	...	...	...	...	...	...	1	·02
		Dhuniakhalli	93,537	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Goghat	96,422	...	...	...	1	...	...	...	...	...	...	...	...	1	·01
		Khanakool	133,300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Singoor	50,184	...	...	...	1	...	...	...	...	...	...	...	...	1	·001
		Jehanabad	99,905	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Howrah ...	Doomjoor	128,477	...	...	3	...	...	...	...	...	...	...	...	...	3	·02
		Juggutbulbpore	77,539	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ooloberiah	81,345	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagnan	63,563	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Amhta	109,068	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shampore	68,881	...	...	...	1	...	...	...	...	...	...	...	...	1	·01
	24-Pergunnahs	Hurwa	49,292	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nababgunge	21,600	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Deygunga	53,516	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Baraset	73,131	...	...	2	...	...	...	...	...	...	...	...	...	2	·03
		Habra	68,965	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Naihatti	55,429	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Diamond Harbour	52,828	...	...	...	...	...	...	...	...	1	12	6	1	20	·37
		Sultanpur	90,319	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
		Debipur	43,455	...	4	...	...	1	...	1	...	2	...	...	1	9	·20
		Tallygunge	47,793	...	1	...	...	...	...	...	...	...	...	2	1	4	·08
		Atchipur	62,536	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bistopore	71,717	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sonapur	31,898	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bariepur	75,830	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Joynuggur	76,140	1	2	...		...	...	...	...	...	...	...	...	3	·03
		Hosseinabad	67,227	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Basirhat	55,887	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Badhuria	130,205	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhangore	78,858	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bankipur	107,275	...	...	...	1	...	...	...	...	...	...	...	...	1	·009
		Dum-Dum	81,678	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mathurapur	50,453	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mutlah	47,518	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement showing the deaths from Small-pox during the year 1882-83 IN THE THANNAHS IN WHICH VACCINATION WAS PERFORMED—continued.

Circles.	Districts.	Thannahs.	Population.	Deaths during— April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.	Total.	Ratio of deaths per 1,000 of population.
Metropolitan Circles—concluded.	Nuddea	Kishnaghur or Nuddea	77,887	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kurimpore	102,754	1	...	...	...	...	...	...	1	...	...	...	1	3	·03
		Meherpore	71,685	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gangni	74,955	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tehatta	89,160	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kooshtea	27,443	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhaluka	41,929	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nowpara	136,712	...	2	...	...	...	...	...	...	...	...	...	...	2	·01
		Dowlutpore	71,178	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hanskhalli	45,340	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kishengunge	32,701	...	1	...	...	...	...	...	...	...	...	...	...	1	·03
		Nakasipara	59,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaligunge	54,192	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranaghat	81,415	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chagdah	64,620	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chuadanga	21,818	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Damurhudda	63,014	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jibunnagore	40,120	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalupole	39,396	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gopalnugger and Bongong	59,[illegible]08	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Garriapatta	61,052	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gaighatta	50,223	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhadulia	68,184	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Moheshpore	112,137	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kumerkhalli	98,247	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alumdanga	89,947	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chapra	63,509	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jaguli	88,306	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sarsha	79,016	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Jessore	Magura	159,162	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mahomedpore	83,677	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shalkhia	50,464	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Narail	151,362	...	...	...	...	1	...	...	...	...	...	...	...	1	·01
		Bagarpara	63,902	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhenida	102,627	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sailkopah	138,305	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalligunge	89,202	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kotchandpore	44,038	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jessore	167,354	...	...	...	...	...	...	...	...	...	97	...	...	97	2·20
		Monirampore	155,611	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Godkhali	67,420	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kesubpore	85,450	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Kalia	72,947	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Lohargura	103,803	...	...	...	1	...	...	...	...	...	...	...	...	1	·009
	Murshidabad	Harriharpara	57,135	3	13	3	3	...	...	...	...	...	...	...	13	35	·61
		Bharathpore	79,620	12	15	13	3	2	...	...	...	...	1	...	1	47	·59
		Bhudurihat	27,859	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhogawangolla	57,238	...	2	...	...	...	...	...	...	...	...	...	...	2	·03
		Shamshergunge	69,530	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dewanserai	55,036	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Barna	96,868	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gons	78,421	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sooti	66,556	...	...	...	...	...	...	...	...	...	...	...	2	2	·02
		Nowadah	47,559	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jellinghi	108,508	...	1	...	...	...	...	...	...	...	2	1	25	29	·26
		Rughunathpore	57,269	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gokurna	41,895	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khargram	54,018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dowlatbazar	89,568	...	...	...	2	...	...	...	2	...	...	24	7	35	·38
		Sujagunge	8,315	...	...	...	...	...	...	...	...	...	...	...	3	3	·35
		Shahanagur	9,523	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gorabazar	12,633	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Burona or Kandi	79,659	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mirzapore	45,496	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Khoolna	Bagerhat	187,618	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rampal	49,827	...	...	3	...	...	...	...	...	...	...	...	...	...	...
		Mollahat	50,478	...	...	...	...	...	...	...	...	...	...	...	...	8	·06
		Morelgunge	62,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khoolna	127,390	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bitaghatta	87,501	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dumria	109,020	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Paikgatcha	70,478	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaligunge	146,130	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Satkhera	96,614	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalaroa	71,958	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Magura	48,212	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Asasuni	62,412	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL OF METROPOLITAN CIRCLES	13,762,548	117	149	133	78	47	25	18	21	18	136	62	84	888	·06
		Suburbs of Calcutta	251,439	6	4	2	2	...	...	...	1	...	4	21	26	66	·26
		TOTAL INCLUDING SUBURBS OF CALCUTTA	14,013,987	123	153	135	80	47	25	18	22	18	140	83	110	954	·06
Darjiling Circle.	Dinagepore	Pirgunge	98,880	5	2	2	...	...	...	...	...	...	...	...	...	9	·09
		Rajarampore	199,409	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Birgunge	130,891	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Thakurgaon	220,397	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ransonkoil	75,102	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
		Hemtabad	85,287	...	...	...	...	1	...	...	...	...	...	...	...	1	·01
		Nawabgunge	61,037	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaliagunge	94,882	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bungshihari	81,877	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patnitolla	69,238	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mohadebpore	67,265	...	...	1	1	...	...	...	...	...	...	...	...	2	·03
		Neetapore or Pursha	48,586	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patiram	70,061	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gunnarampore	74,491	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chintamun	52,058	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Habra or Parbatipur	66,708	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement showing the deaths of Small-pox during the year 1882-83 IN THE THANNAHS IN WHICH VACCINATION WAS PERFORMED—continued.

CIRCLES.	DISTRICTS.	THANNAHS.	POPULATION.	DEATHS DURING— April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.	TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.
DARJILING CIRCLE—concluded.	Rajshahye	Bagmara	121,581	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bounleah	81,096	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Putia	121,238	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nattore	153,662	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Lalpore	82,689	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nougaon	85,840	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manda	103,308	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Singra	112,607	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Borigram	121,554	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Charghat	120,483	...	...	...	...	...	...	...	...	...	...	1	1	2	·01
		Godagari	43,709	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Panchpur	79,431	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tannore	85,609	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Rungpore	Mahigunge	116,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Darwani	137,054	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalygunge	155,607	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ullipore	216,213	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sadullapore	112,563	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nosbutgunge	194,507	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jalhacca	103,672	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dimlah	138,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barabaree	142,512	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kowigunj	94,055	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nageswari	177,229	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mitapukur or Malanga	99,013	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pirgunge	69,008	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhawanigunge	57,803	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sundergunge	91,469	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Govindgunge	169,027	...	...	...	2	...	...	...	...	...	...	...	...	2	·01
	Bogra	Bogra	227,207	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sharinkandi	123,490	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sherepore	77,747	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shibgunge	59,080	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Panchbibi	66,724	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Badalgatchi	39,374	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Adamdighi	94,534	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khetlal	40,023	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Darjiling	Phansidewah	63,211	1	...	1	...	...	...	...	...	...	...	...	1	3	·04
		Darjiling	15,300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalimpong	12,683	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kurseong	26,937	...	...	...	...	...	...	...	...	...	...	1	4	5	·19
	Julpaiguri	Sikarpore	80,178	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Boda	178,648	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Julpaiguri	67,471	...	...	...	...	...	...	...	...	...	...	...	3	3	·04
		Patgram	64,036	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mynaguri	66,451	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alipore	32,086														
		Keranti	32,453	3	1	...	...	...	...	...	...	...	...	...	...	4	·03
		Dhupguri	51,697														
	Purneah	Purneah	138,704	...	...	...	...	...	...	...	...	...	1	...	1	2	·01
		Kusba Amour	124,880	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dhamdaha	109,391	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gandwarah	123,046	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Arariah	200,012	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Matiari	91,115	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ramgunge	107,552	...	...	...	...	...	...	...	...	...	...	2	...	2	·01
		Kissengunge	158,100	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bahadurganj	196,142	1	2	...	...	...	...	...	1	2	10	...	...	16	·08
		Kaliaganj	277,059	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kudwa	184,275	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bulrampur	115,031	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manihari	54,456	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Maldah	Ratua	80,024	1	1	1	...	...	...	...	...	...	...	...	...	3	·03
		Kharba	108,051	...	...	...	...	...	...	...	1	...	...	...	...	1	·009
		Shibgung	102,162	2	1	5	10	4	...	...	...	...	...	2	1	25	·24
		Gomastapur	52,810	1	1	1	1	...	...	...	...	1	...	...	...	5	·09
		Maldah	50,894	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		English Bazar	72,615	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gasole	54,317	1	1	...	...	...	...	...	...	...	...	...	...	2	·03
		Kallachuck	115,092	...	2	...	...	...	...	...	...	...	...	2	...	4	·03
		Nowabgunge	66,453	2	1	2	...	...	...	...	...	...	1	...	...	6	·09
		TOTAL FOR DARJILING CIRCLE	8,886,504	17	13	14	14	5	.	..	2	3	12	8	11	99	·01
RANCHI CIRCLE.	Lohardugga	Ranchi	18,443	...	...	...	...	...	...	...	...	...	Return not received.	Ditto.	Ditto.	...	...
		Lodhma	67,988	...	...	...	...	...	...	...	...	...				...	...
		Korambi	89,078	10	2	20	10	...	...	...	...	...				42	·47
		Basia	58,234	...	...	...	...	...	...	...	...	...				...	...
		Daltongunge	64,202	...	...	1	...	...	...	...	...	...				1	·01
		Loherdugga	122,023	2	...	...	...	3	...	...	...	...				5	·04
		Tamar	95,690	...	...	...	2	...	...	...	...	...				2	·02
		Palkot	108,719	31	...	27	15	...	...	2	...	...				75	·69
		Barway	61,080	21	8	23	11	12	...	...	...	...				74	1·14
	Hazaribagh	Tandua	55,750	...	1	1	1	...	...	...	...	...	...	...	...	3	·05
		Semuria	37,029	...	...	...	...	...	...	...	...	...	1	...	...	1	·03
		Hazaribagh	103,024	...	2	...	...	...	...	...	...	...	...	...	...	2	·01
		Bamgurh	72,953	2	1	26	...	...	...	1	...	2	...	1	...	33	·45
		Khurrackdiha	150,545	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chatra	64,018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Burhi	52,054	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gowan	53,875	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Koderma	73,802	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Huntergunge	56,954	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Singhbhum	Chybassa circle	205,652	...	...	...	3	4	8	4	1	15	20	30	22	102	·49
	Manbhum	Purulia	177,487	...	...	...	...	...	...	...	...	...	...	...	2	2	·01
		Political Estates	468,516	No data.													
		TOTAL FOR RANCHI CIRCLE	3,276,652	66	14	98	42	19	3	7	1	17	21	31	24	343	·15

Statement showing the deaths from Small-pox during the year 1882-83 IN THE THANNAHS IN WHICH VACCINATION WAS PERFORMED—continued.

Circles.	Districts.	Thannahs.	Population.	April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.	Total.	Ratio of deaths per 1,000 of population.
Sonthal Pergunnahs Circle.	Monghyr ...	Monghyr	139,256	3	7	4	...	...	...	...	...	9	...	...	...	23	·16
		Jamalpore	19,824	34	42	9	2	...	...	...	...	...	...	...	1	88	4·43
		Surajgurra	166,264	3	12	13	4	...	...	...	...	...	1	...	5	38	·22
		Jamooe	120,563	...	2	6	9	4	...	...	...	...	...	...	...	21	·17
		Chakye	109,540	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khargpur	143,079	23	24	22	21	...	...	...	...	...	...	...	4	94	·65
		Gogri	365,954	10	4	1	...	...	...	...	...	...	...	1	3	19	·05
	Bhagulpore ...	Umurpore	208,508	51	48	42	30	13	5	6	4	3	1	3	1	216	1·03
		Banka	134,227	21	31	20	9	9	2	2	14	6	5	7	5	131	·97
		Bhagulpore	157,882	57	59	35	23	5	3	5	2	8	2	1	5	205	1·23
		Protabgunge	153,272	1	...	...	...	...	...	...	...	...	...	...	...	1	·006
		Kishengunge	135,328	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Soopole	299,042	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Katooria	77,644	4	2	...	...	...	...	...	...	...	...	...	...	6	·07
		Colgong	192,237	12	20	6	7	1	1	1	1	2	2	3	3	59	·30
		Bungaon	148,500	...	...	...	...	...	...	...	...	...	1	...	...	1	·006
		Muddehpura	262,678	2	6	...	...	...	...	...	...	...	...	...	...	8	·03
	Sonthal Pergunnahs ...	Godda	348,493	7	3	8	1	...	1	...	...	...	...	...	2	22	·06
		Rajmahal	253,825	...	...	1	1	...	...	...	...	7	...	...	...	9	·03
		Pakour	204,919	1	...	...	...	...	...	...	...	...	1	...	...	2	·009
		Dumka	363,186	...	...	1	...	...	2	3	...	...	...	...	...	6	·01
		Deoghur, including Jamtara and Sharat	307,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL FOR THE SONTHAL PERGUNNAHS CIRCLE	4,265,350	229	260	168	116	32	14	17	21	35	13	15	29	949	·22
Eastern Bengal Circle.	Dacca ...	Sreenugger	275,984	3	3	14	4	13	6	6	6	6	2	9	11	83	·30
		Dacca	164,287	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Munshigunge	244,463	15	8	4	...	...	...	...	...	...	...	...	1	28	·11
		Jaffergunge	143,012	...	...	...	...	...	...	...	...	11	...	...	...	11	·07
		Rupgunge	164,159	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shabhar	174,831	1	...	...	...	...	...	...	...	...	...	...	...	1	·005
		Raipura	202,738	6	2	...	...	...	...	...	...	...	...	...	...	8	·03
		Nowabgunge	160,245	9	2	2	...	...	...	...	...	...	2	10	...	25	·15
		Naraingunge	91,199	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kapasia	119,515		...	...	...	...	...	...	...	...	...	...	1	1	·008
		Manickgunge Town	11,289	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manickgunge thanna	172,007	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Harirampore	100,009	...		...	...	...	...	...	...	...	...	...	...	...	...
	Faridpore ...	Faridpore	91,551	...	...	...	...	...	...	...	...	...	1	...	2	3	·03
		Sibchar	116,045	17	15	19	6	4	8	3	8	3	8	6	15	106	·91
		Palong	256,250	28	18	9	10	5	...	...	...	...	...	...	...	70	·27
		Gopalgunge	85,341	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Goalundo	84,906	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Awanpore	100,257	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pangsha	141,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Madaripore	165,017	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Belgachhi	94,598	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kotalipara	68,153	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhushna	107,415	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhanga	164,389	1	2	1	2	5	1	...	1	...	...	...	2	15	·09
		Muksudpur	156,934	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Noakholli ...	Sudharam	96,184	3	...	1	...	...	...	1	...	...	...	...	...	5	·05
		Sundeep	72,467	18	11	6	...	...	1	2	4	8	35	64	68	217	2·99
		Lakhipur	113,321	10	4	3	4	1	...	...	...	...	...	...	1	23	·20
		Fenny	132,697	74	35	10	7	2	...	2	1	...	...	...	1	132	·99
		Ramgunge	80,742	10	10	5	7	1	4	3	...	5	1	2	6	51	·63
		Begumgunge	128,933	22	19	5	2	5	4	...	...	...	...	...	1	58	·44
	Mymensing ...	Mymensing	282,846	...	...	...	...	...	...	...	...	...	...	1	...	1	·003
		Durgapore	116,457	13	8	10	15	12	1	4	5	7	11	6	1	93	·79
		Netrokona	471,658	34	39	56	34	28	10	9	9	35	45	5	4	308	·65
		Keshoregunge Town	12,898	...	...	...	1	...	...	...	...	...	...	...	...	1	·07
		Keshoregunge thanna	122,705	20	23	12	13	1	2	1	3	...	7	...	15	97	·79
		Ishwargunge	229,452	4	...	...	1	...	1	...	2	5	1	5	3	21	·09
		Bazitpore	209,258	18	15	2	1	...	2	1	...	...	2	1	...	42	·20
		Fulpore	114,467	5	1	...	4	...	...	1	...	1	...	...	2	14	·12
		Nickli	122,459	1	...	...	...	...	...	...	...	4	...	...	4	9	·07
	Pubna ...	Pubna	174,391	...	...	...	...	2	...	...	...	...	...	...	...	2	·01
		Doolai	186,303	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shazadpur	216,494	1	...	...	...	...	...	...	...	...	...	...	...	1	·004
		Mothurapore	102,486	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ullaparah	171,711	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Raigunge	92,374	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chatmohur	133,467	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Serajgunge	219,185	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL FOR THE EASTERN BENGAL CIRCLE	7,258,367	318	215	150	111	79	40	33	39	82	163	145	137	1,516	·20
Orissa Circle.	Cuttack ...	Cuttack	155,335	8	6	3	6	5	...	3	6	4	27	5	Return not received.	78	·46
		Dhurmsala	248,702	53	16	17	7	3	...	2	1	5	18	71		193	·77
		Salipur	240,079	49	34	13	6	8	3	...	5	10	32	69		229	·91
		Jajpore	250,736	31	10	6	4	...	4	...	2	5	17	44		123	·49
		Kendrapara	191,020	27	18	4	1	...	...	5	...	12	28	37		132	·69
		Patamundi	109,401	26	8	7	7	2	...	1	2	7	20	39		118	1·07
		Aul	91,015	23	22	7	7	3	4	2	3	2	46	56		175	1·92
		Banki	56,900	No data.													
	Poori ...	Pipli	226,782	23	22	8	5	7	2	...	...	3	1	1	14	86	·37
		Khurdah	260,478	24	22	10	12	11	6	9	8	11	21	22	25	190	·70
		Mourbhunj	385,737	No data.													
		Bhudruck	169,072	12	9	2	1	...	1	2	3	15	85	38	17	135	·79
		Chandbali	51,926	...	...	1	...	...	...	...	...	...	1	20	19	41	·78
		TOTAL FOR ORISSA CIRCLE	2,457,043	275	167	87	50	39	20	24	30	74	246	402	75	1,495	·60

Statement showing the deaths from Small-pox during the year 1882-83 IN THE THANNAHS IN WHICH VACCINATION WAS PERFORMED—concluded.

CIRCLES.	DISTRICTS.	THANNAHS.	POPULATION.	DEATHS DURING— April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.	TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.
BEHAR CIRCLE.	Patna ...	Mokamah	93,824	9	1	4	1	1	1	...	...	...	2	1	1	21	·21
		Behar	282,283	27	29	21	2	...	...	1	...	...	1	4	4	89	·31
		Barrh	194,109	4	1	11	2	...	1	1	...	...	...	...	4	24	·12
		Hilsa	176,075	10	4	2	3	...	...	...	...	...	...	...	...	19	·10
		Futwa	88,051	...	...	...	...	1	...	...	...	...	...	...	...	1	·01
		Masouri	120,613	...	...	...	1	...	...	...	...	...	1	1	2	5	·04
		Bankipore	97,001	3	2	2	2	4	...	...	...	...	...	...	...	13	·13
		Dinapore	67,612	...	1	1	...	...	...	...	...	...	1	...	...	3	·04
		Monuir	98,516	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
		Bikram	180,302	1	...	...	1	...	...	...	...	...	...	...	1	3	·01
		Patna	187,911	1	9	5	2	1	1	...	...	...	...	...	...	19	·10
		Silao	91,477	2	1	1	...	...	...	...	...	...	...	...	3	7	·07
	Gya	Jehanabad	274,754	...	4	1	...	1	...	4	4	9	8	4	6	41	·14
		TOTAL FOR BEHAR CIRCLE	1,880,007	57	53	48	14	8	3	6	4	9	13	10	21	246	·13
		Total for the Vaccination Circles	41,471,228	1,082	877	714	435	231	105	105	119	240	610	709	428	5,655	·13
		MUNICIPALITIES AND DISPENSARIES, &c.	1,834,883	124	177	111	45	26	27	10	12	26	40	34	53	685	·37
		GRAND TOTAL ...	43,306,111	1,206	1,054	825	480	257	132	115	131	266	650	743	481	6,340	·14

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th June* 1883.

F. W. A. DEFABECK,
Offg. Sanitary Commissioner for Bengal.

B.

Statement showing the Total Deaths registered from Small-pox IN ALL THE DISTRICTS *of the Bengal Province during each month of the year* 1882-83.

DISTRICTS.	POPULATION.	NUMBER OF DEATHS DURING—												TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.	REMARKS.
		April 1882.	May 1882.	June 1882.	July 1882.	August 1882.	September 1882.	October 1882.	November 1882.	December 1882.	January 1883.	February 1883.	March 1883.			
Calcutta	433,219	2	2	5	2	2	...	...	...	2	2	15	21	53	·12	
Burdwan	1,391,823	...	...	...	...	...	...	...	5	5	17	11	15	53	·03	
Bankura	1,041,752	7	10	21	6	...	2	...	...	...	2	2	...	50	·04	
Birbhum	794,428	...	...	...	...	...	...	...	...	...	...	...	1	1	·001	
Midnapore	2,517,802	92	99	97	60	43	23	17	14	16	10	20	14	505	·20	
Hughli	680,813	...	1	...	1	4	...	...	...	...	...	...	1	7	·01	
Serampore	361,955	...	...	1	1	...	...	...	...	...	...	1	...	3	·008	
Howrah	635,381	2	...	3	1	...	...	...	...	...	...	...	1	7	·01	
24-Pergunnahs	1,618,420	2	9	6	2	1	...	1	1	3	12	17	4	58	·03	
Suburbs of Calcutta	251,439	6	4	2	2	...	...	...	1	...	4	21	26	66	·26	
TOTAL OF 24-PERGUNNAHS ...	1,869,859	8	13	8	4	1	...	1	2	3	16	38	30	124	·06	
Nuddea	2,017,847	1	3	...	...	...	...	...	1	...	...	1	1	7	·003	
Jessore	1,577,249	...	...	...	1	1	...	...	...	...	...	...	1	3	·001	
Murshidabad	1,226,790	16	31	16	8	2	...	...	2	...	3	27	52	157	·12	
Khoolna	1,079,948	..	..	3	...	...	..	...	...	...	...	...	...	3	·002	
Dinagepore	1,514,346	5	3	3	1	1	...	...	...	...	...	...	...	13	·008	
Rajshahye	1,338,638	...	...	...	..	...	...	...	...	...	...	1	1	2	·001	
Rungpore	2,097,964	..	...	...	2	...	...	...	...	...	...	...	...	2	·0009	
Bogra	734,358	...	...	1	...	...	...	...	...	...	...	...	...	1	·001	
Pubna	1,311,728	1	1	...	...	2	...	...	...	...	...	...	...	4	·003	
Darjiling	155,179	1	...	1	...	...	...	...	...	...	...	3	19	24	·15	
Julpaiguri	581,562	3	1	..	...	...	...	...	...	...	...	...	3	7	·01	
Dacca	2,116,350	34	15	20	4	13	6	6	6	17	4	10	13	157	·07	
Faridpore	1,631,734	40	35	29	18	14	9	3	9	3	3	5	19	193	·11	
Backergunge	1,900,889	82	63	62	31	34	14	8	17	18	59	33	59	480	·25	
Mymensing	3,051,966	110	89	83	73	41	16	17	20	52	68	55	69	693	·22	
Tipperah	1,519,338	115	95	79	44	25	15	8	11	7	37	97	109	642	·42	
Chittagong	1,132,341	107	44	18	15	1	...	3	...	1	2	...	1	192	·16	
Noakholli	820,772	160	90	37	23	14	9	12	5	10	87	73	88	558	·67	
Patna	1,756,856	57	50	50	15	7	3	2	...	...	5	6	25	220	·12	
Gya	2,124,682	18	20	16	16	2	25	12	14	25	19	17	44	228	·10	
Shahabad	1,964,909	1	3	2	1	5	2	...	...	1	2	1	1	19	·009	
Mozufferpore	2,582,060	106	115	59	30	18	21	9	1	3	4	24	33	423	·16	
Durbhanga	2,633,447	128	171	70	16	4	5	1	1	2	9	31	34	472	·17	
Sarun	2,280,382	13	53	25	35	11	12	1	...	6	31	34	—	221	·10	For 11 months only.
Chumparun	1,721,608	108	140	183	89	81	8	9	1	...	11	7	26	613	·35	
Monghyr	1,969,774	92	165	135	47	5	...	2	1	9	3	10	40	509	·25	
Bhagulpore	1,966,158	154	172	120	83	29	12	14	21	19	11	17	17	669	·34	
Purneah	1,848,687	1	2	...	...	...	...	...	1	2	11	2	1	20	·01	
Maldah	710,448	9	7	9	11	4	...	...	1	1	1	4	1	48	·06	
Sonthal Pergunnahs	1,568,093	8	3	10	2	...	3	3	...	7	1	...	2	39	·02	
Cuttack	1,738,165	294	149	82	52	30	16	17	19	53	216	348	—	1,376	·80	Ditto.
Poori	886,487	132	97	65	50	42	43	28	49	68	93	98	107	872	·98	
Balasore	945,280	82	72	25	13	4	12	4	6	24	99	229	156	726	·76	
Hazaribagh	1,104,742	16	20	44	6	10	4	5	2	2	5	7	6	127	·11	
Lohardugga	1,609,244	76	40	72	42	22	3	2	...	...	—	—	—	254	·20	For 9 months only.
Singbhum	561,964	1	5	6	18	22	11	9	12	31	57	47	45	260	·46	
Manbhum	1,058,228	15	11	6	5	6	5	2	...	3	1	5	19	69	·06	
TOTAL FOR THE PROVINCE ..	66,580,245	2,102	1,800	1,406	821	450	279	105	221	390	865	1,836	1,097	11,008	·16	
RATIO PER 1,000 OF POPULATION ...	......	·03	·02	·02	·01	·006	·004	·002	·003	·006	·01	·01	·01	·16		

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th June* 1883.

F. W. A. DEFABECK,
Offg. Sanitary Commissioner for Bengal.

Reg. No. 410J—396—9-6-83.

MUNICIPAL DEPARTMENT.

SANITATION.

DARJEELING, THE 6TH OCTOBER 1883.

RESOLUTION.

READ—

The Report of the Sanitary Commissioner for Bengal for the year 1882, and the Vaccination Report for the year 1882-83.

Read again—

The Reports for the previous year, and the Resolution recorded upon them.

In consequence of the orders under which the Vaccination Report is incorporated with the General Report of the Sanitary Commissioner, the combined Report was not received by Government until the 18th July. As the Vaccination Report relates to the financial year, which ends on the 31st March, it is impossible to require the submission of the Sanitary Commissioner's Report on the date hitherto prescribed.

2. The temperature of the year 1882 was on the whole slightly below the average, the mean being 76°·15 against a normal mean of 76°·24. It was sensibly above the average in January, March, and December, and below it in May. The distribution of rainfall was more irregular than usual. The total fall of the year was 57·66 inches throughout the Province, against an average of 60·99 inches, the deficiency being spread over the greater part of Behar and Northern and Eastern Bengal. The rains began somewhat earlier than usual, the fall in May being 1·04 inches above the average. On the other hand July was unusually dry; and a break which occurred in the early part of October was succeeded by a heavy fall over the whole Province in the latter half of the month. In no division, however, was there any marked excess or deficiency of rain during the year as a whole.

3. The registration of vital statistics received considerable attention during the year, and the Sanitary Commissioner is of opinion that the results indicate that more than usual care has been bestowed on the subject by the magisterial and police authorities. Dr. deFabeck in particular instances the success attained in Burdwan under the energetic administration of Mr. Larminie. This officer "visited every registering circle at least twice during the year; instructed the superior police officers in the nature of the steps to be adopted for keeping the chowkidars in check, and threatened punishment for remissness. Some were severely punished. The publicity which the report of these active measures soon obtained brought about a palpable improvement, for the year's results showed an increase in the number of deaths recorded of 8,287." The Lieutenant-Governor observes that in this district the recorded death-rate is 35·42 per mille; while the birth-rate in the town of Burdwan is 27·58. If the conclusions arrived at by Mr. Bourdillon in his Report on the Census of 1881 are correct, and the true birth and death-rates of the Province are assumed to be about 34 and 31 per mille respectively, it is probable that the returns of Burdwan, a district where the well-known local fever has for years produced an abnormally large number of deaths, together with a reduced number of births, are not very far from the truth. Excellent results were also obtained in Bankoorah and Chumparun, where the Magistrates, Messrs. Anderson and Henry, devoted special attention to the accuracy and completeness of the returns. Wherever this is the case, it has been abundantly proved that a fair degree of accuracy can be secured; but a system which relies on the spasmodic and intermittent efforts of individuals can at best but look for a partial and uncertain success. It is hoped that the Union Committees to be established under the Local Self-Government scheme will, if properly supervised, provide a valuable agency for the collection of these statistics.

4. A register of mutations of births and deaths, which was devised by Mr. Carstairs, the Sub-Divisional Officer of Serampore, was given a trial during

the year, and was introduced experimentally into a number of municipalities and unions. It was not, however, found wholly successful, and its use is no longer enforced. A scheme drawn up by the Sanitary Commissioner for investing Civil Surgeons with greater powers and responsibilities for the effectual scrutiny of mortuary and birth returns was also introduced, but was found unsuitable in consequence of the serious increase of work which it threw on the ministerial establishments. Arrangements have, however, been made, in accordance with a suggestion of the Government of India, to publish in the *Calcutta Gazette* weekly returns of births and deaths in all first-class municipalities, in addition to the usual monthly mortuary statistics of districts. The Compulsory Registration Act IV (B.C.) of 1873 is now in force in 113 towns, including the Hazaribagh Municipality, into which it was introduced after the close of the year under review. Prosecutions were instituted under its provisions in the following towns only :—

Districts.	Towns.	Number prosecuted.	Number convicted.	Number acquitted.	Number struck off.	Number pending trial.	Amount of fines realised.	Birth-rate per 1,000 of population.	Death-rate per 1,000 of population.
							Rs. A. P.		
Burdwan ...	Burdwan	10	7	3	......	......	11 8 0	27·38	40·85
	Cutwa	4	3	1	......	......	4 8 0	Not registered.	Not registered separately.
Bankoora ...	Bankoora... ...	4	3	......	......	1	3 0 0	31·47	37·23
Hooghly ...	Hooghly and Chinsurah	55	47	7	......	1	56 12 0	22·49	29·59
	Utterparah	4	......	......	......	4	......	19·05	29·03
	Bansberiah	8	6	2	......	......	2 8 0	Not registered.	Not registered separately.
	Boidabatti	7	7	......	......	......	5 6 0	Ditto.	24·45
Howrah ...	Howrah	15	13	2	......	......	26 0 0	17·63	25·00
24-Pergunnahs ...	Suburbs of Calcutta	37	20	17	......	......	51 0 0	19·04	45·69
Rajshahye ...	Beauleah	12	12	......	......	......	12 0 0	14·67	28·39
Dacca ...	Dacca	27	24	3	......	......	33 12 0	21·00	29·70
Mymensingh ...	Jamalpore	1	1	......	......	......	1 0 0	40·64	25·16
Tipperah ...	Comillah	6	4	1	......	1	3 8 0	31·76	26·65
Maldah ...	English Bazar ...	2	1	1	......	......	Not stated.	Not registered.	27·19
Cuttack ...	Cuttack	11	11	......	......	......	15 7 0	Ditto.	20·02
Midnapore ...	Midnapore	12	11	1	......	......	5 8 0	12·06	26·73
	Tumlook	12	10	2	......	......	30 2 0	Not registered.	Not registered separately.
	Khirpoy	6	2	4	......	......	0 2 0	Ditto.	Ditto.
Purneah ...	Purneah	2	......	......	1	1	......	14·91	43·85

It is impossible to believe that no breaches of the law occurred in any of the 94 towns not mentioned in the foregoing list. The Lieutenant-Governor has more than once pointed out that, where the Act has been introduced, it should not be allowed to remain a dead-letter, and he trusts that it will not again be necessary for him to draw attention to this matter. The Sanitary Commissioner should consider the advisability of requiring the submission in future of periodical returns showing the proceedings taken under the Act.

5. Births were registered in 45 towns against 46 in the previous year, registration having been discontinued in one town, Burhea in Monghyr. Excluding 1,501 still-born children, the number of births registered was 37,198 against 38,456 in 1881. The reduction amounted to 1,258, and the recorded birth-rate fell from 23·25 per 1,000 to 22·49. The excess of deaths over births as registered amounted to 11·41 per 1,000 against 11·54. The Sanitary Commissioner remarks that "in 15 towns against 12 in 1881 the birth-rates were highest." This observation is not understood. In 1881 there were 20 towns in which the recorded birth-rate exceeded 30 per mille, while in the year under review the corresponding number was only 13. These were the following, viz.—

	1882.	1881.
Jamalpore in Monghyr	43·79	43·94
Jamalpore in Mymensingh	40·64	40·76
Bhagulpore	37·87	37·73
Sitamurhi	37·22	30·53
Behar	35·75	35·96
Brahmanbariah	35·11	30·04
Gya	33·73	34·18
Monghyr	33·50	34·59
Basirhat	33·30	26·25
Kendraparah	32·55	33·06
Comillah	31·76	22·50
Bankoorah	31·47	25·49
Serampore	30·26	29·28

The greatest improvement took place in Bhagulpore, Gya, and Comillah. Only nine towns recorded births in excess of the death-rate. These were Jamalpore in Mymensingh, Brahmanbariah, Monghyr, Sitamurhi, Bettiah, Comillah, Mokameh, Chuprah, and Behar. Of the children born during the year, 20,040 were males and 17,158 females, the proportions being 116 males to 100 females against 113 in the previous year. In England the corresponding proportion is 104 males, which was approximated by only eight towns during the year under review It must, however, be remembered that in this country the average age of the husband exceeds that of the wife in a much greater degree than is the case in Europe, and that in accordance with a well established physiological law a higher proportion of male births must therefore be expected.

6. The number of deaths registered throughout the Province, the 15,076 still-born children not being counted, was 1,349,651, or at the rate of 20·41 per 1,000 of the population. The death-rate in each of the last six years was—

	Deaths	Ratio per mille
1877	1,077,601	17·96
1878	1,064,116	17 73
1879	951,881	15 85
1880	922,633	15·40
1881	1,255,478	18·99
1882	1,349,651	20 41

The ratios for 1881 and 1882 are calculated upon the population as returned at the census of 1881; while those for the previous years are calculated on that of the census of 1872. The improvement during the last two years is therefore even greater than the above figures appear to shew. The highest death-rates were recorded in Nuddea (39 37), Burdwan (35·42), Beerbhoom (34 34), Bankoora (32·21), Moorshedabad (30·80), Patna (29·28), Jessore (29 26), Backergunge (28·06), Rajshahye (27.32), and Balasore (27 27). In ten districts the recorded death-rate was below 15 per 1,000, and the figures must be regarded as worthless These were Sarun (14·85), Monghyr (14·60), Hazaribagh (14·60), Tipperah (14 16), Chumparun, where the improvements brought about by Mr. Henry only had effect in the fourth quarter (18·90), Rungpore (13·49), Furreedpore (13·15), Sonthal Pergunnahs (11·05), Mymensingh (8 94), and Darjeeling (7.01). The chief cause of the enhanced mortality of the past year, in so far as it was real and not due to improvements in registration, was the extensive and fatal prevalence of cholera. The number of deaths recorded as having occurred from this cause exceeded that of the previous year by no less than 103,172. There was, however, a considerable falling off in the recorded mortality from fever and small-pox. The urban and rural circles contributed to the reported casualties of the year in the following proportions.—

		Deaths	Ratio per mille
Urban	1882	76,601	31 05
	1881	78,848	31·96
Rural	1882	1,273,050	20 00
	1881	1,176,630	18·48

There are strong reasons for believing that the mortality in Bengal towns is little, if at all, higher than that of country tracts. In the absence therefore of evidence of any accession of disease peculiar to rural circles, it seems probable that the increased number of deaths recorded in these circles in 1882 is chiefly due to improvements in registration. The total number of male deaths was 738,090, and of female deaths 611,561. The proportion per cent. of male to female deaths was the same as in 1881, viz. 120. Only nine districts returned proportions approximating the English rate of 109 male to 100 female deaths. These were Burdwan, Beerbhoom, Bankoora, Balasore, Hooghly, Khulna,

Pooree, Cuttack, and Lohardugga. The following table shews the registered mortality according to age :—

	Ratio per 1,000 of Population.			Ratio per cent. of male to female deaths.
	Urban.	Rural.	Province.	
Under 1 year	184·45	86·31	89·94	121
1 to 5 years	39·98	21·08	21·59	109
5 to 10 years	21·27	11·89	12·14	131
10 to 15 „	16·41	11·00	11·18	137
15 to 20 „	27·49	13·86	14·17	113
20 to 30 „	22·10	15·12	15·43	110
30 to 40 „	23·68	16·70	17·01	134
40 to 50 „	26·03	21·60	21·81	145
50 to 60 „	36·52	30·72	30·98	122
Above 60 years	62·07	45·62	46·29	101

These figures illustrate the terrible mortality among infants under one year of age. The Sanitary Commissioner reports that in 26 of the urban areas, the ratios of infant deaths ranged from 200 to 515 per 1,000 of infant population. The relative mortality among the different nationalities was much the same as in former years, the death-rates per mille being for Christians 14·20, for Hindus 20·48, for Mahomedans 20·71, for Buddhists 2·88, and for other classes 16·09.

7. In Calcutta both the birth and the death-rates are below those recorded for the other Bengal towns, being 17·32 and 30·41 per mille respectively, against 22·49 and 31·05. There are no variations of importance in the death-rates from particular diseases, except in the case of fever, the death-rate from which, probably, owing to more correct diagnosis, is only 8·35 per mille in Calcutta against 15·72 in other urban circles, the death-rate from "Other causes" being proportionately swollen. The average mortality in cantonments, with a population of 56,168, was at the rate of 13·35 per 1,000. There were no deaths in Fort William. During the year the Port of Calcutta was visited by 24,128 seamen, of whom 19,764 were Europeans and 4,364 natives. The average daily population of European seamen was 1,792; the number of admissions into hospital was 2,257, and there were 100 deaths. The proportion of deaths to population was therefore 55·80 per 1,000 against 53·33 in 1881. The increase is traceable to cholera, dysentery, and enteric and malarious fevers. Among native seamen the deaths amounted to 186, or at the rate of 7·32 per 1,000, against 141, or at 5·54 per 1,000 in the previous year. This increase was entirely due to the prevalence of cholera. A native Inspector has recently been appointed to supervise the floating population of the port, who, amongst other duties, is charged to advise them where to seek for medical aid when sick, and it is hoped that by this means some improvement will be effected in their sanitary condition.

8. The most prominent feature in the sanitary history of the Province during 1882 was the remarkable prevalence and fatality of cholera. The number of recorded deaths from this disease was 182,352, or at the rate of 2·75 per 1,000 of population—a mortality which was never reached in any year of the previous decade except in 1876. Cholera was found in 27,314 villages against 15,581 in the previous year; and prevailed epidemically in 115 circles, severely in 118, and mildly in 376, being altogether absent from only 86. Urban circles contributed 11,830 deaths, and rural circles 170,522, or at the rates of 4·79 and 2·67 per 1,000 respectively. The districts in which the mortality was most severe were Balasore (6·21), Jessore (6·05), Nuddea (5·46), Purneah (4·79), Mozufferpore (4·68), Backergunge (4·50), Pooree (4·25), Cuttack (4·19), and Durbhanga (4·14). The Commissioner of the Presidency Division will be requested to invite the attention of the Commissioners of the Suburban Municipality to Dr. deFabeck's remarks regarding the condition of the Chitpore, Nawabputty, and Khalaseebagan bustees, and the bustees in Bhowanipore, Kansaripara and Bhatpara, and to submit a report on the subject. The disease was as usual most prevalent in the dry months of February, March, April, and May, and subsided rapidly on the breaking of the rains, increasing again in November and December. The general relation of cholera to rainfall appears to be the only fact in connection with this disease which is known with any degree of certainty. The Sanitary Commissioner writes :—"The reports of the year do not cast any new light upon the etiology of the disease. Polluted sources of drinking supply

are always more or less suspected, and local insanitary conditions are very generally indicated as exciting or predisposing causes; but it is also to be remarked that in several instances local incidence of the disease is often quite independent of local conditions. Climatic insalubrity, deficient rainfall, imperfect drainage, the retention of moisture and damp in the soil, errors of diet, infection, importation, &c., are all in their turn accused of favouring, if not absolutely of originating, this disease." On the whole, cholera was most prevalent in the Orissa Division, especially in Pooree Town, where the large influx of pilgrims swelled the nominal death-rate to 13·33 per 1,000. The Rajshahye and Cooch Behar Division was the least affected by the disease.

9. The recorded mortality from small-pox shows a large falling off during the past year. The number of deaths reported during each of the past four years was—

	Deaths.	Ratio per mille.
1879	22,843	·34
1880	22,953	·34
1881	24,371	·36
1882	13,651	·20

The disease prevailed with more or less severity in 33 circles against 43 in 1881, and was wholly absent in 280. The mortality was apparently high only in Chittagong and the districts of the Orissa Division, in which the recorded death-rates were 1·06, 1·02, 1·02, and ·84 per 1,000 respectively. It was also heavy in the following towns, viz. Chyebassa (12·15), Jamalpore in Monghyr (9·14), Bettiah (3·13), Balasore (2·91), and Kendrapara (2·35). The disease showed greatest activity in the hot months, from February to June, and diminished during the rains and cold weather. The following table shows the number of deaths from small-pox among children under 12 years of age:—

	Deaths.	Proportion per cent. to total mortality.	Proportion per cent. of male to female deaths.
Under 1 year	2,999	21 96	111
1 to 12 years	6,130	44·91	109
Total ...	9,129	66·87	110

The proportion of deaths among children to total deaths was 66·87, which, though still very high, is less than in the previous year, when the corresponding percentage was 72·04.

10. According to the returns, the mortality from fever amounted to 929,943 deaths, against 940,911 in the previous year. The reported death-rate per mille from this cause thus nominally fell from 14·23 to 14·06. The Sanitary Commissioner rightly observes that "this reduction is unimportant, and does not remove the belief derived from a study of the general fever history of the Province that, on the whole, fever was as prevalent and almost as fatal as it had been in the preceding year, whose records figure by far the highest rate of mortality of any year under registration." Dr. deFabeck points out, however, that the death-rate of a year which follows on another of exceptional mortality is swollen by the deaths of those whose constitutions had been undermined by the epidemic of the previous year. The following table shows the mortality from fever in each year of the last decade:—

	Deaths.	Ratio per mille.
1882	929,943	14·06
1871	169,605	2·56
1872	237,868	3·59
1873	303,645	4·59
1874	328,721	4·97
1875	368,087	5·56
1876	561,537	8·49
1877	711,036	10·75
1878	742,887	11·23
1879	622,260	9·41
1880	689,605	10·43
1881	940,911	14·23

The increase which is apparent in the record of late years is probably not so much due to greater mortality as to improvement in registration. During the year under review the virulence of the disease was limited, with few exceptions, to the Burdwan, Presidency, and Rajshahye Divisions, the districts most seriously affected being the following:—

	Ratio per mille.
Nuddea	30·18
Burdwan	28·86
Beerbhoom	27·62
Bankoora	26·40
Moorshedabad	26·01
Rajshahye	24·24
Jessore	21·61
Bogra	19·72
Hooghly	19·63
Khulna	18·65
Pubna	17·97

On the other hand the districts of Midnapore, Howrah, 24-Pergunnahs, Dinagepore, and Rungpore, and the sub-division of Serampore, enjoyed comparative immunity. In Backergunge, Gya, Maldah, and Purneah there was no abatement from the fatality of the previous year, but throughout the rest of the Province the suffering was less severe, notably so in Hazaribagh, Patna, Julpigoree, Dinagepore, Midnapore, and Rungpore.

11. In paragraph 115 of the Report, Dr. deFabeck has made some very interesting remarks regarding the theories commonly put forward to account for the incidence of fever, and he has well exposed the fallacy of the widely prevalent idea that growing vegetation is in itself noxious to human and animal life. "If we regard malaria, as experience gives us every warrant for doing, in the light of a nutritive element to plant-life, whatever little we may know of its agency in regard to the human organism, it must plainly be our constant endeavour so to regulate the balance between soil-emanation and plant-absorption, that the energy of the latter may always be equivalent to, or more potent than that of, the former. Where this equilibrium of counteraction cannot be obtained, there it will be necessary to devote careful attention and labour to efficient drainage of the soil" And again: "There is a very common, but a very ill-grounded, prejudice in India against *growing* vegetation. Low vegetation, in so far as it excludes air and prevents proper ventilation, is undoubtedly objectionable; but so far from there being any single physiological act necessary to the vitality of plant-life which can either originate or favour malarial fever, everything that is known of such action has an exactly opposite tendency." In connection with the question of drinking supply, the Sanitary Commissioner has suggested, as the result of actual observation, that water which has been exposed to a high temperature may be drunk with perfect impunity, even though containing organisms which, under ordinary circumstances, are highly inimical to health. As an instance, Dr. deFabeck mentions the case of the waste water which had been passed through the condensers of a jute-mill, and had been subjected to a temperature exceeding 212°. It was found that the coolies and other persons employed on the mill preferred this water to that of the tanks or the river, and that those who used it enjoyed demonstrably better health than those that did not. Nevertheless, on a specimen of the water being submitted for analysis by the Chemical Examiner, Dr. Warden, in ignorance of its origin, unhesitatingly condemned it as unfit for drinking purposes. These results appear to suggest that the present processes of chemical analysis, while sufficient to recognise and disclose the presence of organic virus, are not sufficiently sensitive to distinguish deprivation of its malignity. An important field is thus opened up for sanitary and hygienic research. The question is not one which can properly be discussed, at all events in its present stage, in a Government Resolution; but the Lieutenant-Governor will await with much interest the results of any further investigations which Dr. deFabeck may be able to make in this direction in communication with Dr. Warden.

12. In the Port of Calcutta fever was slightly more prevalent than in 1882. Among European sailors, the death-rate from malarious fever was 1·79 per 1,000, and from enteric fever 2·14 per 1,000. There were also 26 deaths from malarious fever among the native floating population against 33 in the year before. Dysentery and diarrhœa were very prevalent in the Port, there being 289 cases with 10 deaths, against 223 cases and 7 deaths in 1881. The fatality from these diseases was greater throughout the Province generally, the number of recorded deaths being 61,362 against 57,029. The Sanitary Commissioner is, however, of opinion that in the mofussil errors of diagnosis are more common in this class of diseases than in any other. They were most common in Patna, Serampore, Hooghly, Sarun, and the districts of the Orissa Division. Deaths from the various classes of injury, including suicide, wounds, accident, snake-bite, and wild beasts numbered 21,611 against 21,655 in the previous year, nearly one-half coming under the last-named head. Under the head of "Other diseases" there occurred 140,732 deaths, the majority of which occurred in the Orissa Division, Backergunge, Patna, and Sarun, and in the following towns—Gya, Suburbs of Calcutta, Bhagulpore, Dacca, and Burdwan.

13. Some progress was made by the Vaccination Department during the year. The operations of Government vaccinators were extended for the first time to seven thannas in the Maldah district, four thannas in Mymensingh, three thannas in Monghyr, three thannas in Bhagulpore, and five thannas in Orissa, as well as to six thannas in Patna, which had been barely touched in the previous year. The area to which protection was thus afforded for the first time amounted to 9,052 square miles of country, containing a population of 4,528,084. In addition to the above, eight thannas in Purneah and Maldah, which had been completely traversed by Government vaccinators in previous years, were placed under the licensed system of vaccination. The following table shows the number of operations performed in each vaccination circle:—

Circles.	Total number of vaccinations performed		Difference in 1882-83.	
	In 1882-83.	In 1881-82.	Increase.	Decrease.
Calcutta ...	11,373	6,955	4,418	......
Metropolitan Circles ...	344,178	314,408	29,770	......
Suburbs of Calcutta ...	15,152	13,876	1,276	......
Total of Metropolitan Circles ...	359,330	328,284	31,046	......
Darjeeling Circle ...	282,291	341,973	......	59,682
Ranchi " ...	110,893	169,333	......	58,440
Sonthal Pergunnahs " ...	134,571	93,866	40,705	......
Eastern Bengal " ...	242,518*	288,929	......	46,411
Orissa " ...	43,858	40,908	2,950	......
Behar " ...	17,487	14,677	2,810	......
Total of Vaccination Circles ...	1,202,321	1,284,925	......	82,604
Municipalities and dispensaries ...	59,104	64,082	......	5,578
Grand Total ...	1,261,425	1,349,607	......	88,182

* Exclusive of the work of some of the licensed vaccinators, whose returns, 26 in number, were received by the Superintendent much after the March return had been submitted and the year's summaries closed.

There was a considerable decrease in the number of operations performed, both in the vaccination circles and in municipal areas. There was a considerable increase in the Sonthal Pergunnahs and Metropolitan Circles, and smaller ones in Calcutta, the Suburbs, Orissa, and Behar. On the other hand there was a large decrease in the Ranchi, Darjeeling, and Eastern Bengal Circles, and to a smaller extent in municipalities. The explanations offered of the decrease are, in the Ranchi Circle—(1) opposition to vaccination; (2) changes of Superintendents and consequent disorganization of the subordinate staff; (3) want of effective assistance from the civil authorities; (4) the deputation of a batch of vaccinators to Singbhoom for the suppression of small-pox which interfered with the regular progress of work in the original area; (5) the paucity of unprotected children in Singbhoom; and (6 the fact that the people of Singbhoom declined to accept vaccination at the hands of Government vaccinators, preferring to submit themselves to the licensed Brahman vaccinators. In the Eastern Bengal Circle the reasons alleged are—(1) determined opposition of the people in certain places to receive vaccination, amounting in some instances to positive violence;

(2) sparseness of the population; (3) want of subjects in areas formerly vaccinated; and (4) omission of 26 returns of operations which were not received in time for inclusion in the report. The plea of sparseness of population is not intelligible, unless it is pretended that the population has been thoroughly protected. The population has not diminished in numbers since the previous year, and there is no apparent reason why this cause, if it really exists, should have operated more powerfully in 1882-83 than in 1881-82. As a matter of fact, the Eastern Bengal Circle contains some of the most densely populated districts in the province outside Behar. The Lieutenant-Governor will await the report which is promised on the practice prevailing in this circle of promoting head vaccinators to vacancies in the post of Deputy Superintendent—a practice which Dr. deFabeck very rightly condemns In the Darjeeling Circle the reduction is said to be due to the fact that all the areas formerly available had been exhausted, and, with the exception of a part of Maldah, were made over to the licensed agency. The decrease, it should be observed, was confined to the operations of the Government vaccinators. Among municipalities the chief falling off occurred in Howrah, Rajshahye, Furreedpore, Chittagong, Moorshedabad, Midnapore, Noakholly, Chumparun, Beerbhoom, and Cuttack. On the other hand greater activity was displayed in the municipalities of the following districts, viz. Patna, Monghyr, Mymensingh, Maldah, Balasore, Pooree, Bankoora, Nuddea, Hooghly, Maunbhoom, Burdwan, Tipperah, and Shahabad.

14. The following table shows the recorded rates of success in each circle in primary and secondary operations:—

Circles.	Number of successful vaccinations				Ratio per cent. of successful cases			
	In 1882-83.		In 1881-82.		In 1882-83.		In 1881-83.	
	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.
Calcutta ...	9,016	287	6,240	34	99·37	12·47	98·64	5·40
Metropolitan Circles ...	343,040	192	313,245	89	99·76	87·67	99·68	49·44
Suburbs of Calcutta ...	8,300	1,646	7,270	1,882	99·96	26·68	99·72	28·57
Total of Metropolitan Circles	351,340	1,838	320,515	1,971	99·76	28·77	99·68	29·13
Darjeeling Circle ...	280,425	60	338,666	8	99·78	89·55	99·08	57·14
Ranchi Circle ...	98,929	1,430	156,314	1,663	92·57	85·13	93·31	91·52
Sonthal Pergunnahs Circle ...	134,052	21	93,527	11	99·75	58·33	99·65	68·75
Eastern Bengal Circle ...	241,240	78	288,514	6	99·62	60·93	99·85	100·00
Orissa Circle ...	41,268	17	40,456	......	94·29	100·00	98·89	[illegible]
Behar Circle ...	17,159	27	14,344	2	98·65	90·00	97·79	50·00
Total of Vaccination Circles	1,173,429	3,767	1,258,576	3,695	98·87	35·45	98·66	39·91
Municipalities and dispensaries ..	50,132	1,730	57,622	1,484	92·77	69·70	92·99	54·59
Grand Total ...	1,223,561	5,497	1,316,198	5,179	98·60	45·12	98·39	43·24

A high degree of success was obtained in primary vaccinations in all the circles except Ranchi and Orissa. In secondary operations the figures returned, with the exception of those for Calcutta and the Suburbs, are still altogether unworthy of credit. This is the third year in succession in which this subject has been noticed, and the Lieutenant-Governor must now request the Sanitary Commissioner to take more effectual measures to make the returns correspond more nearly with the truth. Of the total number of persons successfully vaccinated during the year, 158,979 were under one year of age, 823,129 were between one and six years, and 241,453 were above six years. It thus appears that 79·14 per cent. of the total number of successful vaccinations were performed on children under six years of age against 73·36 per cent. in the previous year. This improvement is satisfactory. The number of infants vaccinated during the first year of life, however, is still lamentably small. If the general birth-rate throughout the Province be assumed to be 30 per mille, which is certainly below the mark, and if the infants who died are excluded, it appears that only 12·59 of the infants born during the year were vaccinated, and that the very large proportion of 80·57 per cent. remained unprotected within vaccination areas. Even this low figure, however, is a distinct improvement upon the results obtained in 1881-82, when the corresponding percentage was only 11·32. The best results were obtained in the Ranchi Circle, where the proportion of infants vaccinated rose from 17·31 to 39·37 per cent. The returns of inspection work show that creditable progress was made by the Superintendents of the Darjeeling and Metropolitan

Circles, by the Deputy Superintendents of Ranchi and the Suburbs, and by the majority of the Inspecting Vaccinators. There was, however, a conspicuous decline in the proportion of inspections made by the Superintendents of Behar, Ranchi, and Orissa, and by the Deputy Superintendents of the Sonthal Pergunnahs and Metropolitan Circles. The falling off, which is said to be due chiefly to the gradual extension of protection, and the increasing difficulty of finding subjects, appears to be in a great measure justified.

15. On the whole, it may be said that the general feeling of the people towards vaccination is becoming more favourable. Marked evidence of this is given in Burdwan, Bankoora, Hooghly, Nuddea, Rajshahye, Noakholly, Bhagulpore, Sonthal Pergunnahs, and Manbhoom. On the other hand, instances of determined opposition are not unknown, even in the most advanced towns, among particular classes. These should be rigorously dealt with under the special Act. The Inspector-General of Police will be requested to enquire into the conduct of the Sub-Inspector of Police at English Bazar in Maldah, who is said to have openly advised the people not to accept vaccination. The Commissioner of Patna will be asked to report further upon the statement that the Municipal Commissioners of Gya declined to render aid in the promotion of vaccination. The Lieutenant-Governor has learnt with pleasure that special assistance was rendered by Baboo Hem Chunder Ghose of Bagnan, Mr. Pope of Nunichi, Munshi Dilwar Ali, Baboo Rajendra Narain Mozumdar Chowdhuri of Narendahar, the Maharajahs of Hutwa and Shushung, the Rajah of Aul, and the zemindars of Bulrampore, Chowsaltipore, Madhupore and Mayna.

16. The Compulsory Vaccination Act V (B.C.) of 1880 was introduced during the year into the Municipalities of Howrah, Monghyr, Jamalpore, Gya, Serampore, and English Bazar, and into Utterparah from the 1st April 1883. It is now in force in 14 towns, and since the close of the year under review steps have been taken to introduce it into all the municipalities in the Burdwan and Presidency Divisions. The Sanitary Commissioner believes that the general extension of the Act is the only means of effectually breaking down the opposition that is still met with in many parts of the Province. It seems, however, that resistance is only offered by a few isolated classes, and is not in any way general even in the localities where it is found. The Lieutenant-Governor would prefer to deal with each case on its own merits, without having recourse to a sweeping measure for which public opinion is not yet ripe. The effect of vaccination on small-pox is illustrated by the following table :—

	Population.	Deaths reported.	Ratio per mille.
Thoroughly protected areas ...	20,223,268	579	·02
Fairly well „ „	11,785,748	1,072	·09
Unprotected areas	34,848,852	9,355	·26

And again—

	Ratio per cent. of total attacked.	Ratio per cent. of deaths to number.
Vaccinated	17·63	11·53
Inoculated	5·64	54·43
Unprotected	75·68	18·01

These figures are significant, and need no comment.

17. An important experiment was made during the year by the introduction of the system of bovine vaccination in Calcutta. Assistant Surgeon Rai Ram Sunder Ghose Bahadur was deputed to Bombay for the purpose of making himself familiar with the details of the organization adopted in that Province, and on his return early in December 1882 arrangements were immediately made for introducing the system. The first calf was vaccinated on the 23rd January 1883, and during the two months that ensued between that date and the close of the year under review a large number of vaccinations were performed. The arrangements, which are still in their infancy, are somewhat imperfect; but improvements are being effected, and it is hoped that by the close of the current year the system will have taken deep root.

18. The total cost to Government of vaccinations performed during the year was Rs. 1,16,085, of which Rs. 71,745 represents the cost of the operations performed by the Government establishment, and Rs. 44,340 that of the

establishment provided by Government for supervising the operations of the licensed vaccinators. In addition to the above, a sum of Rs. 7,997 was expended on vaccination by various municipalities in the Province. Some assistance was also given by private persons, and by Dispensary Committees, including the Maharajahs of Hutwa and Durbhunga, the zemindars of Naraya, Gopalgunge, and Bori, the proprietors of the Kurnafuli Tea Estate in Chittagong, and the Dispensary Committees of Lalgunge, Tajpore, and Burhurwa. The total expenditure of Government was less by Rs. 1,032 than that of the previous year. The cost of each successful operation performed by the Government agency was 3 annas and 3¾ pies, and that by the licensed agency 10¼ pies, aggregating 1 anna 6¾ pies for both departments.

19. The Lieutenant-Governor had occasion, in the course of the year under review, to call the attention of the Sanitary Commissioner to the comparatively small amount of *sanitary* work performed by the members of the Vaccination Department, and especially by the Superintendents of Vaccination in their capacity as *ex-officio* Deputy Sanitary Commissioners. At the instance of Government the Sanitary Commissioner drew up a set of rules for the guidance of officers of his department in the discharge of their sanitary duties. These rules were approved and promulgated too late in the year to admit of their having very much effect during the period embraced by the present report. They have, however, had the effect of causing more attention to be given to the sanitary condition of towns and villages in the interior during the camping season of 1882-83. The Lieutenant-Governor hopes that the Sanitary Commissioner will give this subject his constant attention, and he is confident that, if the diary which has been prescribed is not allowed to fall into a matter of routine, it will be productive of valuable results in the future.

20. Of the total income of the municipalities in the Province, exclusive of Calcutta, amounting to upwards of 31 lakhs, 31 per cent. was expended on sanitary works against 24 per cent. in the previous year, besides 18 per cent. on roads against 16 per cent. This satisfactory result is mainly due to the large amount of funds set free by the exemption of municipalities from police charges. The Sanitary Commissioner reports that the municipalities in the districts of Rajshahye, Mymensingh, Durbhunga, Pooree, Manbhoom, Khulna, and Patna have hitherto failed to take full advantage of the increased resources placed at their disposal. On the other hand, an exceptionally large proportion of municipal income was devoted to sanitary works in Rungpore (81·48), Dacca (47·09), Gya (41·86), Noakholly (40·61), Shahabad (39·37), Bhagulpore (38·76), Beerbhoom (37·49), Sonthal Pergunnahs (36·83), Jessore (35·60) and Howrah (35·56). Systematic drainage schemes were inaugurated and either wholly or partially completed in Midnapore, Howrah, Naihatti, the Suburbs of Calcutta, Darjeeling, and Maldah. Schemes previously commenced were continued, and in some cases completed, in Rungpore, Gya, Bhagulpore, Cuttack, Pooree, Hazaribagh, and Lalbagh. Projects were also entertained in Culna, Soori, Tumlook, Serampore, Berhampore, and Bhagulpore. Excellent work was done in Maldah, where roads were metalled, side drains cut, and jungle removed in many villages within a radius of ten miles of head-quarters, and also in the Chanchal Estate. Channels were excavated for the drainage and improvement of large tracts of country, for agricultural extension, for improving habitations, for providing water-supply, for promoting communication by boat, and for increasing the volume of water in certain channels, thereby tending to check malarious exhalations in their neighbourhood. Dr. Ghose, the Civil Surgeon of Rungpore, has given an interesting and instructive account of the valuable results obtained from the drainage operations which have been carried out in the marshes round the town of Rungpore. This scheme was begun in 1877, and year by year, as the water-logged condition of the soil has been more and more removed, and the surrounding swamps reclaimed, the death-rate of the town from fever has steadily diminished. It is now 23·64 per 1,000, where it was 34·22 in 1878.

21. In Dacca a "very commendable beginning has been made in filling up the 'gors,' the receptacles for generations of sewage, filth, and the contents of the privies, which literally line their borders." The town of Chittagong is said to have benefited much by the clearing of rank jungle in the neighbourhood,

and by closer attention to surface cleansing and general conservancy. A grant of Rs. 10,000 from General Revenues has recently been made to this municipality to enable it to carry out certain schemes of improvement, and it is hoped that much good will ensue if the money is judiciously laid out. The question of a proper supply of water for the shipping of the Chittagong Port, which is one of the great wants of the place, is receiving the attention of Government in the General Department. In the Suburbs of Calcutta and in Howrah good work has been done in reclaiming and improving bustees, and by the introduction of provisions for free perflation by means of regularly constructed lines and streets.

22. The Burdwan water-supply scheme, which was noticed last year, was commenced, and made considerable progress in the year under review. The Bhagulpore scheme is under revision, but the bulk of the necessary funds has been subscribed, and the work has now been taken in hand. Arrangements are now being made for the extension of the Calcutta water-supply to the Suburbs and also to Barrackpore, and it is expected that substantial progress will be made during the current year. The Lieutenant-Governor's attention has also been given to a proposal by which all the river-side municipalities from Howrah to Serampore should unite in a common scheme for water-supply. This proposal has not, however, yet been formulated, and is still under the consideration of the Municipal Commissioners concerned. A number of minor sanitary improvements have been effected in various districts and towns of the Province, which it is unnecessary to recapitulate at length. The thanks of the Lieutenant-Governor are due to the gentlemen, official and non-official, by whose personal exertions and liberality they have been carried out. Mr. Rivers Thompson's acknowledgments are also due to Dr. deFabeck, who held charge of the office of Sanitary Commissioner during the greater part of the year, for his very interesting report.

ORDER.—Ordered that a copy of the above Resolution be forwarded to the Sanitary Commissioner, Bengal, for information and guidance.

Ordered also that a copy of the above Resolution, and of the Report, be forwarded to the Surgeon-General, Bengal, and to all Commissioners of Divisions, for information.

Ordered also that extract paragraph 15 from the above Resolution be forwarded to the Judicial (Police) Department for information, and to the Inspector-General of Police for information and guidance.

Ordered also that a copy of the above Resolution, together with a copy of the Report, be submitted to the Government of India, in the Home Department, for information.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal.

No. 1379T—M.

COPY forwarded to the Sanitary Commissioner, Bengal, for information and guidance.

No. 1380T—M.

COPY, with a copy of the Report, forwarded to the Surgeon-General, Bengal, for information.

No. 1381T—M.

COPY, with a copy of the Report, forwarded to the Commissioner of the Presidency Division for information and guidance, with special reference to paragraph 8 of the Resolution, and for communication to all District Magistrates in his division.

No. 1382T—M.

COPY, with a copy of the Report, forwarded to the Commissioner of the Patna Division for information and guidance, with special reference to paragraph 15 of the Resolution, and for communication to all District Magistrates in his division.

No. 1383T—M.

EXTRACT paragraph 15 from the Resolution forwarded to the Judicial (Police) Department of this Government for information.

No. 1384T—M.

EXTRACT paragraph 15 from the above Resolution forwarded to the Inspector-General of Police for information and guidance.

No. 1385T—M.

COPY, with a copy of the Report, submitted to the Government of India, in the Home Department, for information.

Circular No. 11T—M.

COPY, with a copy of the Report, forwarded to all Commissioners of Divisions (except Presidency and Patna) for information, and for communication to all District Magistrates in their respective divisions.

By order of the Lieutenant-Governor of Bengal,

E. N. BAKER,

Offg. Under-Secretary to the Govt. of Bengal.

DARJEELING,
The 6th October 1883.

O E. G.—Reg. No. 8236C—334—18-10-83.

SIXTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL,

FOR THE YEAR 1883,

INCLUDING THE ANNUAL REPORT ON VACCINATION IN BENGAL,
FOR THE YEAR 1883-84.

BY

DEPUTY SURGEON-GENERAL R. LIDDERDALE, M.D.,

Sanitary Commissioner for Bengal.

Calcutta:

PRINTED AT THE BENGAL SECRETARIAT PRESS.

1884.

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SIXTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL.

YEAR 1883.

SECTIONS I, II, III, & IV.

The above sections refer to matters which are not under the supervision of the Sanitary Commissioner for Bengal, but are dealt with in the Imperial Sanitary Commissioner's Reports. They are, consequently, omitted from this Report.

SECTION V.

VITAL STATISTICS.

Statistics dealt with in this Report.

2. In this Section are considered the birth statistics of 46 principal Municipal towns and the death statistics of the Province for the year 1883.

REGISTRATION.
Value of—in 1883.

3. The following tables disclose the general results of Birth and Death registration during the year under review:—

BIRTHS.						DEATHS.				
DISTRICTS.	Number of towns in each district in which Births were registered.	Number of Births registered in 1883.	Ratio of Births per 1,000 of Population in 1883.	Increase or decrease as compared with 1882.	Ratio of male Births to every 100 female Births.	DISTRICTS.	Number of Deaths registered in 1883.	Ratio of Deaths per 1,000 of Population in 1883.	Increase or decrease as compared with 1882.	Ratio of male Deaths to every 100 female Deaths.
1. Mymensing ...	1	551	31·24	6·40 D	110	1. Nuddea ...	59,726	36·07	4·12 D	120
2. Bhagulpore ...	1	1,933	33·64	4·25 D	105	2. Rajshahye ...	43,990	32·86	5·54 I	112
3. Tipperah .	2	969	31·20	2·45 D	133	3. Burdwan ...	39,092	28·08	7·34 D	108
4. Chumparun ...	1	648	30·47	1·36 I	126	4. Jessore ...	52,448	27·04	3·41 D	119
5. Gya ...	[illegible]	2,237	29·88	4·40 D	107	5. Birbhum ...	20,634	25·97	8·37 D	106
6. Bankura ...	2	1,150	28·72	2·02 I	99	6. Murshidabad	30,267	24·67	6·13 D	120
7. Shahabad .	1	1,241	28·55	8·81 I	121	7. Pubna ...	32,148	24·50	1·16 I	111
8. Burdwan ...	1	966	• * 28·34	·76 I	107	8. Backergunge	45,251	23·80	4·26 D	111
9. Sarun ...	2	1,743	26·51	5·51 I	113	9. 24-Pergunnahs	43,235	23·12	·95 D	128
10. Serampore ...	2	824	25·74	2·59 D	119	10. Patna ...	38,633	21·98	7·30 D	110
11. Durbhanga ...	1	1,608	24·32	6·98 I	117	11. Balasore ...	20,638	21·83	5·44 D	111
12. Patna ...	5	6,128	22·89	1·57 I	116	12. Bogra ..	15,887	21·63	2·37 D	116
13. Monghyr ...	3	1,903	22·76	10·78 D	106	13. Hughli ...	14,206	21·49	3·29 D	104
14. Chittagong ...	1	485	21·91	1·40 I	115	14. Khulna ...	23,067	21·35	2·55 D	118
15. Hughli ...	1	802	20·71	1·78 D	106	15. Gya ...	44,928	21·14	1·65 I	109
16. Dacca ...	1	1,649	20·57	·43 D	118	16. Midnapore ...	51,846	20·59	·07 D	114
17. 24-Pergunnahs	2	5,559	20·44	·33 I	113	17. Poori ...	18,019	20·28	1·32 D	114
18. Howrah ...	1	1,951	18·47	·84 I	119	18. Bankura ...	21,121	20·27	11·94 D	108
19. Nuddea ...	3	1,170	17·76	·25 I	119	19. Dacca ...	41,448	19·58	1·26 D	115
20. Poori ...	1	431	17·74	1·32 I	108	20. Howrah ...	12,145	19·11	4·02 I	118
21. Mozufferpore...	2	838	17·14	·84 D	123	21. Dinagepore ...	28,860	19·01	1·83 I	131
22. Midnapore ...	1	518	15·43	3·37 I	107	22. Shahabad ...	30,950	18·79	2·24 I	121
23. Cuttack ...	3	943	13·43	14·41 D	119	23. Julpaiguri ...	10,818	18·60	3·26 I	124
24. Manbhum ...	1	114	12·24	11·63 D	128	24. Rungpore ..	38,058	18·14	4·65 I	120
25. Lohardugga ...	1	221	11·98	4·99 D	108	25. Maldah ...	12,841	18·07	2·79 D	132
26. Purneah ...	1	170	11·32	3·50 D	109	26. Bhagulpore ...	34,880	17·74	1·66 D	126
27. Rajshahye ...	1	224	11·81	5·36 D	130	27. Purneah ...	32,517	17·58	4·08 D	127
28. Faridpore ...	1	106	10·32	8·09 D	92	28. Noakhalli ...	14,312	17·43	·49 D	117
29. Jessore ...	1	82	9·65	·35 D	90	29. Hazaribagh ...	18,893	17·10	2·50 I	113
30. Darjiling ...	1	51	6·40	1·12 D	168	30. Serampore ...	5,940	16·87	2·72 D	120
						31. Lohardugga...	26,701	16·79	1·52 D	118
						32. Cuttack ...	29,644	16·51	2·81 D	113
						33. Sarun ...	34,972	15·33	·18 I	134
						34. Chumparun...	25,658	14·88	·98 I	131
						35. Chittagong ...	16,142	14·25	5·80 D	116
						36. Tipperah ...	21,557	14·18	·02 I	122
						37. Singbhum ...	7,961	14·16	1·15 D	126
						38. Durbhanga ...	35,575	13·50	3·48 D	124
						39. Mozufferpore	33,523	12·98	6·07 D	128
						40. Manbhum ..	18,612	12·86	3·47 D	122
						41. Faridpore ...	20,827	12·76	·39 D	123
						42. Sonthal Pergunnahs ...	19,648	12·52	1·47 I	126
						43. Mymensing ...	56,848	11·74	2·80 I	124
						44. Darjiling ...	1,765	11·11	4·10 I	182
						45. Monghyr ...	19,576	9·93	4·73 D	123
Total of 1883 ...	46	87,215	22·08	......	114	Total of 1883 ...	1,245,676	18·82	......	118
Total of 1882 ...	45	37,198	22·65	......	117	Total of 1882 ...	1,349,651	20·41	......	120
Difference ...	1 I	*17 I	*·57 D	......	3 D	Difference ...	103,975 D	1·59 D	......	2 D

* This apparent incongruity (increase in the number, with a decrease in the ratio of births to population) has been caused by the inclusion in 1883 of the population and births of the Cuttack town, which had no place in the statistics of 1882.

Rates per 1,000 of Population at which Deaths from All Causes were registered.		50 and above.	40 to 50.	30 to 40.	20 to 30.	15 to 20.	10 to 15.	Under 10.
Number of circles in which deaths were registered at the rates indicated	In 1883 ..	2	10	80	206	189	119	33
	In 1882 ...	12	41	84	217	152	103	35

Results of Birth registration.

4. The results of Birth registration attained during the year under review, as presented in the first of the above tables, are closely similar to those of the preceding year, and equally defective. The towns in which the largest number of births were omitted from the reckoning are the 18 in the districts numbered 18 to 30 in the above list.

Results of Death registration.

5. The figures representing the Death statistics indicate a retrogression in the registration of deaths to the extent of 103,975, or at 1·59 per 1,000 of the population of the Province. To this large reduction 30 of the 45 districts contributed. Similarly, a larger number of the registering circles failed to record deaths at the higher rates of 20 to 50 and above per 1,000 of population. In 1882, 354 of the 644 registering circles in the Province contributed to these rates: this year 307 of the 648 circles furnished them. Large omissions in registration are traceable to more than half the districts, viz. to those numbered 19 to 45 in the foregoing list; and of this number, those in which the least attention to the subject appears to have been paid are the following, in the order named:—

Monghyr.	Faridpore.	Singbhum.
Darjiling.	Manbhum.	Tipperah.
Mymensing.	Mozufferpore.	Chittagong.
Sonthal Pergunnahs.	Durbhanga.	Chumparun.

Decreases.	No. of deaths.
In Cholera mortality ..	91,913
„ Small-pox „ ...	3,937
„ Fever „ ..	16,177
„ Bowel-complaints „ ...	6,092
	118,119
Increases.	
In mortality from injury ...	2,059
„ „ „ other causes ...	12,085
	14,144

The deaths recorded under each head of disease in 1883 exhibit, as compared with the figures of the preceding year, the differences marginally noted. Nearly all the local reports indicate that, independently of statistical data, cholera, small-pox and fever—notably the first-named disease—prevailed with diminished virulence and fatality as compared with 1882. The reduction in the number of deaths under these three heads, it will be seen, exceeds the net decrement in the registration of deaths; but I do not mean that it should be understood that the declension in registration has been solely caused by the less fatal prevalence of disease. I allude to the fact as merely an event of the year, which might have to some extent influenced the death record. That registration is still lamentably defective is beyond question. It has improved so far only as to yield a return which bears a somewhat closer approximation to the true death-rate* than the outcome of some former years, and to afford indications of the health condition of the people. But the progress of improvement is slow, and considering that in 15 years we have succeeded in securing a record showing only about two-thirds of the actual mortality, it appears to be time that the present machinery and organization by which the statistics are collected, recorded and supervised should give place to some other scheme which will secure for registration an intelligent and reliable agency, and systematic, continuous and sustained supervision. Under the new system of Local Self-Government it is to be hoped that better results will be obtained.

* 31 per 1,000 of population, according to the conclusions arrived at in the Census Report of 1881, page 65.

Measures adopted locally for improving Registration.

6. The usual attention was bestowed on the subject by most of the magisterial and police authorities in the way of inspecting the registers, testing the chowkidars' reports, and warning or punishing, legally or departmentally, the reporters or recorders for remissness or neglect. But, with very few exceptions, their efforts to improve registration were at best partial or desultory, not having the least pretentions to system, persistency, or permanence. Dr. Macrae, the Civil

Surgeon of *Julpaiguri* reports, and the Deputy Commissioner endorses his remarks, that a large portion of the district to the north and east of the Teesta, where there is a large and growing population of tea-garden coolies, &c., remains, so far as is known, practically unregistered, and that the very small number of thanas and outposts in this large district with a scattered population, is manifestly inadequate for securing anything like complete registration. The District Superintendent of Police of *Gya* is under the impression that, probably, only half the actual number of deaths is reported. He is endeavouring to ascertain to whom this neglect is referable.

A brief account is subjoined of a few well-meant measures adopted by some of the local officers to promote registration.

Burdwan.—In the Burdwan town a person has been specially engaged to check the registration of births and deaths. It is stated that the police now understand well that registration is an important part of their duty and that this fact may lead to the attainment of improved results.

Bankura.—The organization of the rural police and the plan of the chowkidars keeping up note-books of the events, referred to in the Report of the last year, is stated to have worked satisfactorily and improved registration, except in the backward tracts of Raipore and Khatra. This statement is, however, not supported by the records, as there was a falling off in the registration of deaths to the extent of 11·94 per 1,000 of population.

Birbhum.—Mr. Fiddian, the Magistrate, and the District Superintendent of Police visited each registering circle, and examined and checked the registers. The former officer believes that the work of registration is done fairly well in this district.

Midnapore.—In the town of Midnapore the head clerk of the municipal office was made Registrar of Births and Deaths; the municipal office was appointed as the registering circle; sections VII and VIII of Act IV (B.C.) of 1873 were translated, and printed copies thereof posted up in conspicuous parts of the town; the midwives were required to report all births at which they attend; the tax collectors and conservancy peons and jemadars were directed to bring to notice all unreported births and deaths, and the Municipal Overseer and Assistant Overseer to supervise their proceedings; cheque books were furnished to the Registrar with instructions to give to the reporters of the events their counterfoils, with the view that the reporters may be in a position, when called upon to do so, to produce them as evidence that the occurrences had been registered; the municipal wood contractor at the two burning ghats was required to furnish the municipal office with a daily list of the deceased brought to be cremated; the Mahomedan headmen of the four mohullahs, where there are burial grounds, were instructed to keep the municipality informed of all unreported interments; and the police were directed to detect and report all unreported cases of births and deaths. It was made known that half of the fines realized through prosecutions under the Compulsory Registration Act would be paid to those who brought to notice evasions of the requirements of the law. These measures improved registration in this town, as deaths were recorded at the rates of 27·56 per 1,000 of population, as opposed to 26·72 per 1,000 in 1882. It is proposed to extend the scheme to the other municipalities. In the *rural* circles the chowkidars were supplied with hath-chitties (hand-books), in which they were directed to have every death, with the necessary particulars relating to it, entered by any of the available matbars, or pathsala or school teachers, in the village, and the police were directed to test by local enquiry, while on circuit duty, the correctness of the chowkidars' reports. These efforts did not result in improvement of registration, but there was no retrogression, deaths having been recorded at 20·59 per 1,000 of population, against 20·66 in the preceding year.

Rajshahye.—The hath-chitti system, above referred to, was also introduced into this district, with the result that the record of deaths rose from 27·32 casualties per 1,000 to 32·86 per 1,000.

Hughli.—In the municipalities of Hughli, Serampore and Boidyabatti mohurirs were appointed at the burning ghats to ensure complete registration.

24-Pergunnahs.—In the Suburbs of Calcutta, the police reports were tested by the registers kept in all the burning ghats and important burial grounds.

Nuddea.—In the Ranaghat town the provisions of the Compulsory Registration Act were more fully utilized, and the members of the Ward Committees constituted themselves Registrars, and, with the assistance of the tax darogah and other municipal servants, collected the statistics and checked, as far as possible, the returns. In the district each chowkidar was supplied with a book in which the punchayets were required to note down the number of deaths which occurred during the week, and enquiries were occasionally made in the villages to test the correctness of the entries. In some instances chowkidars were fined, and even prosecuted for neglect, but on the whole they performed their duties well, and were most regular in attendance at the thanas. The systematic manner in which the work was done has, it is stated, resulted in marked improvement in registration. The returns, however, show the registration of 36 deaths per 1,000, as opposed to 40 in 1882. A record of 36 deaths per 1,000 may, however, be accepted as approximately correct, and it should be remembered that the fever mortality was severer in this district in 1882. All this is due to the energy and careful supervision of Major Ramsay, who has always, wherever he has been, taken very commendable interest in the subject, and who, with his assistants and inspectors, frequently visited the registering circles in Nuddea.

Jessore.—The Magistrate, Mr. Barton, says that he personally looked into registration at every thana, and that he found that it was generally done very fairly. Deaths were registered at 27 per 1,000 in this district, against 30 per 1,000 in 1882.

Rungpore.—Special attention was given to registration in this district by the Magistrate, District Superintendent of Police, and his subordinates, as is evidenced by the large number of visits paid by them to the villages and thanas for the purpose of testing it, resulting in the detection of many unreported deaths, and in the chowkidars being more alert in the matter. The result was a progress in registration, the record of deaths having advanced from 13 to 18 per 1,000. There is, however, great room for further improvement.

Bogra.—The Magistrate, District Superintendent, and Inspectors of Police visited all the registering circles during the year—the Magistrate at least once, and the other officers one to three times—and the chowkidars were more punctual than before in reporting deaths at the thanas. It is believed that this procedure has tended to render the statistics more trustworthy and correct than before, but deaths were recorded at 21·6 only, against 24 per 1,000.

Monghyr.—The Magistrate, Mr. Kean, has arranged with the District Superintendent of Police that the Sub-Inspectors of Police shall submit a monthly return showing the number of visits paid by them to the villages, the number of deaths ascertained, and the result as compared with the thâna registers. The registration in this district is radically defective. In fact, it returned the lowest result this year, viz. 9·93 deaths per 1,000 of population. Some systematic plan of supervision over the collecting agency, such as the above, is therefore sadly needed.

Measures adopted by this Office to improve Registration.

7. In addition to the ordinary action adopted by this office to improve registration, such as pressing the subject during tours of inspection, pointing out to each Magistrate in which circles in his district errors of registration exist, and urging him to endeavour to rectify them, &c., the weekly birth and death statistics of the principal municipal towns, and the monthly mortuary statistics of the districts are published in the *Calcutta Gazette*, and printed copies of these returns are circulated to the Civil Surgeons, with the view of securing greater attention to registration and early scrutiny of the returns for rectification of defects. The necessity of making enquiries into death statistics was also repeatedly urged on the notice of the officers of the Vaccination Department when on tour in villages. Very little attention was, however, given to the requests, and the duty seems practically to be evaded in most instances. The most noticeable delinquents are the Deputy Superintendents in the Metropolitan Circles.

8. This law was extended during the year only to the Hazaribagh Municipality, and from the 1st of May of the current year to that part of the Darjiling district which lies to the west of the Teesta river, so far as it relates to the registration of *deaths* only The enforcement of this enactment in Darjiling is highly desirable, if only to check the carelessness or recusancy of the tea-planters in the matter of registration. The subjoined statement shows the towns in which prosecutions for breaches of its provisions were instituted.

Extension of the Compulsory Registration Act, IV (B.C.) of 1873.

DISTRICTS.	TOWNS.	Number prosecuted.	Number convicted.	Number acquitted.	Number struck off.	Number pending.	Amount of fines realized.	Birth-rate per 1,000 of population.	Death-rate per 1,000 of population.
							Rs. A. P.		
Burdwan	Burdwan	5	3	2	......	.....	3 0 0	28·34	45·45
	Cutwa ... ... } Dainhat	6	6	......	......	......	8 8 0	Not under registration.	36·32
Bankura	Bankura	3	1	2	......	.....	Not stated.	34·93	27·36
	Bishenpur							23·25	37·96
Hughli	Hughli	15	12	3	......	.....	8 0 0	20 71	29·59
	Bansberia	1	......	1	.....	......	......	Not under registration.	38·68
	Serampore	4	4	......	......	......	1 0 0	26·79	30·64
	Utterpara	6	6	.....	....	......	2 6 6	20·68	31·03
	Boidyabatti	3	3	.....	......	.....	1 1 0	Not under registration.	20·58
Howrah	Howrah	53	50	3	......	..	31 0 0	18·47	23·03
24-Perguunnahs ...	North Dum-Dum	1	1	......	......	......	0 8 0	Not under registration.	31·34
	North Barrackpore ...	1	1	......	......	......	1 0 0	Ditto.	21·70
	Suburbs of Calcutta ...	116	75	41	......	......	85 8 0	19·88	43·08
Nuddea	Santipore	2	2	.....	....	.....	0 6 0	19·40	30·04
Rajshahye ...	Beauleah	1	......	1	.....	......	....	11·31	20 21
	Nattore	4	3	1	.....	......	2 0 0	Not under registration.	30·45
Rungpore... ...	Rungpore	1	1	.....	......	......	2 0 0	Ditto.	29·57
Dacca	Dacca	17	13	4	......	....	11 2 0	20 57	23·90
Tipperah	Comillah	1	1	......	.....	.....	0 2 0	28·28	19·47
Patna	Patna	1	1	.....	......	.....	2 0 0	20·90	32·78
Monghyr	Monghyr	35	30	5	......	......	28 0 0	16·91	22·82
Cuttack	Cuttack	10	8	2	.....	......	4 8 0	9·34	13 39
Balasore	Balasore	1	1	......	......	.....	0 8 0	Not under registration.	24·03
Hazaribagh ..	Hazaribagh...	10	10	......	......	.....	2 8 0	Ditto.	24·43

Although the above is a better list than that presented in the Report for 1882, it will be seen that in only 25 out of the 114 towns in which the law is now in force its provisions were utilized. This is very unsatisfactory. The views of Government on the subject, contained in paragraph 4 of the Resolution on the Annual Report for 1882, were conveyed to the Magistrates for communication to the municipalities in their districts, and quarterly statements of prosecutions instituted were called for, and are being submitted. The question has also been pressed upon the attention of the Municipal Commissioners during tours of inspection. It appears that generally no person is appointed to detect and report evasions of the law, and that it is overlooked that the chowkidar is bound under penalty, by section 6 of the Act, to report every birth or death occurring in his beat to the Registrar. I find that only in the town of Durbhanga some constables were departmentally punished for not reporting deaths. I shall take every opportunity of arousing the attention of the Municipal Commissioners to these points.

Changes affecting Circles of Registration.

9. The following alterations were made during the year under this head :—

(1) The Bongong sub-division, in Nuddea, consisting of thanas Bongong, Mohespore, Gariapotha, Sarsha and Gaighatta, was transferred to Jessore.

(2) A revision of thana and town boundaries in Nuddea resulted in an increase of population in the Santipore town and the Ranaghat rural circle, and a decrease in the towns of Ranaghat and Kishnaghur and in the rural circle of Santipore, and in the creation of a new town, viz. that of Noboddip, with a population of 14,105. On the whole, however, the population of the district was not affected by these changes.

(3) Births were registered in the Cuttack town. In fact, the arrangement came into force from April 1882, but owing to incompleteness the results could not be published in the Report of that year.

(4) Registration of deaths was commenced, for the first time, in the Banki rural circle, in Cuttack, containing a population of 56,900.

(5) For reasons already submitted to Government, a census of the European population in the Darjiling town was again taken. At this re-enumeration it was ascertained that, instead of 160, the population furnished by the census of 1881, the town really contained 1,118 Europeans. It is to be regretted, however, that this census exhibits the Europeans in two* groups only, with reference to age, instead of in the ten† groups adopted at the census of 1881. The revised figures cannot, therefore, be employed in calculating the death-rates according to age in the Darjiling town, and they also affect, similarly, the same calculations for the Province. The Government has, however, decided that in calculating the death-rates of the Darjiling Municipality, the Europeans should be omitted altogether.

* Not exceeding 12 years.
12 years and upwards.

† Under 1 year.
1 and under 5 years
5 " 10 "
10 " 15 "
15 " 20 "
20 " 30 "
30 " 40 "
40 " 50 "
50 " 60 "
60 years and upwards.

The two last changes have increased the total population under registration in the Province by 57,858, and the area in square miles by 116.

BIRTH STATISTICS.

Number born and general results on population.

10. Eliminating the still-born, numbering 1,437, the information under this head stands as follows :—

	1883.	1882.‡
Population	1,685,159	1,641,920
Number born	37,215	37,198
Birth-rate per 1,000 of population	22·08	22·65
Deaths	50,487	56,061
Death-rate per 1,000 of population	29·95	34·14
Excess of deaths over births	7·87	11·49

The number of births and the birth-rate of the year under review do not differ much from the similar information of the preceding year, but the record is, on the whole, very defective.

11. *Towns which returned the largest proportions of Births.*

	1883.	1882.		1883.	1882.
*Jamalpore in Monghyr ...	49·17	43·79	Bhagulpore	33·64	37·87
*Revilgunge	37·30	29·93	*Brahmanberiah ...	33·46	35·11
Bankura	34·93	31 47	*Sitamurhi	31·34	37·22
*Behar	34·42	32·75	Bettiah	30·47	29·11
*Jamalpore in Mymensing	34·24	40 64	Gya	29·38	33·78
Mokamah	33 88	23 75			

The towns distinguished by asterisks returned similar fair results for now three years; the others, excepting Mokamah, for two years.

12. *Towns which recorded Births in excess of Deaths.*

		Rate of excess per 1,000 of population.			Rate of excess per 1,000 of population.
1.	Jamalpore in Monghyr ...	17·03	9.	Bankura	7·57
2.	Bettiah	12·56	10.	Mokamah	4·15
3.	Revilgunge	12·33	11.	Chupra	3·01
4.	Behar	9·84	12.	Kendrapara	2·42
5.	Comillah	8·81	13.	Futwa	1·94
6.	Brahmanberiah	8·55	14.	Barrh	1·65
7.	Arrah	8 38	15.	Chittagong	1·40
8.	Jamalpore in Mymensing ...	7·89	16.	Sitamurhi	1·14

In 1882 only nine towns recorded births in excess of deaths. It is noticeable that all the towns, excepting Bhagulpore and Gya, which appear on the list in paragraph 11, appear also on this.

13. *Births according to Sex.*

	In 1883.			In 1882.		
	Number of births.	Ratio per 1,000 of population.	Proportion per cent. of male to female births.	Number of births.	Ratio per 1,000 of population.	Proportion per cent. of male to female births.
Males	19,872	11·79	114	20,040	12·20	117
Females	17,343	10·29		17,158	10·44	

‡ The populations of the towns of Kishnaghur, Santipore and Ranaghat having been altered, (*vide* paragraph 9 of this Report,) the figures in this column have been recast for comparison with the figures of the year under review. Hence they do not correspond with the figures submitted in the Report for 1882

Numerically, the results do not vary much, and the records of both years exhibit a preponderance of male births. Individually considered, all the towns, except five, also show this preponderance, the proportions ranging from 101 to 168. This is the only salient point in the record of birth registration, as the researches of medical men in Europe have placed beyond doubt the fact that the proportion of male to female births is influenced by the relative ages of husband and wife, the male births increasing as the age of the husband preponderates over that of the wife, as is notably the case in India.

14. *Births according to Class or Nationality.*

	In 1883.		In 1882.	
	Number of births.	Ratio per mille.	Number of births.	Ratio per mille.
Christians	376	21·31	371	23·49
Hindus	25,818	21·75	25,922	22·48
Mahomedans	10,970	23·10	10,852	23·22
Buddhists	2	·94	9	4·25
Other races	49	12·27	44	11·14

Eliminating the other nationalities, the Mahomedans and Hindus presented larger proportions of births than the Christians, who generally register this event more completely.

Births among Non-Asiatics and Mixed Races.

15. Under this head 660 were recorded, distributed into 329 males and 331 females.

DEATH STATISTICS.

16. *Population and Area under Registration.*

	Urban.	Rural.	Province.
Class of Circles.			
Number of main circles ...	96	552	648
Population according to Sex.			
Males ...	1,282,930	31,549,286	32,832,216
Females ...	1,186,233	32,145,435	33,331,668
Total ...	2,469,163	63,694,721	66,163,884
Population according to Class.			
Christians ...	22,222	79,662	101,884
Hindus ...	1,749,733	41,208,296	42,958,029
Mahomedans ...	689,752	20,672,205	21,361,957
Buddhists ...	2,178	77,543	79,721
Other classes ...	5,278	1,662,015	1,667,293
Extent of area of Circles.			
Number of square miles ...		144,863	
Population per square mile ...		456·73	
Deaths per square mile ...		8·59	

The increase in the population and area under registration, as compared with the figures of the preceding year, disclosed by the above table, has been accounted for in paragraph 9 of the Report.

17. *Number and Proportion of Deaths.*

	In 1883.		In 1882.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban	67,383	27·28	76,601	31·05
Rural	1,178,293	18·49	1,273,050	20·00
Province	1,245,676	18·82	1,349,651	20·41

The still-born children numbered 18,225, a larger figure than that of the preceding year. They are not included in the above table. The results of the year exhibit a decrease of 103,975 deaths, or at 1·59 per 1,000 of the population under registration. Both the urban and rural circles shared the diminution, the former to the extent of 9,218 deaths, or at 3·77 per 1,000 of population; the latter to the extent of 94,757 deaths, or at 1·51 per 1,000. The reduction is referable to the lesser fatality with which cholera, small-pox, fever and bowel-complaints prevailed during the year, particularly the first-named disease.

18 *Mortality from Specific Death Causes.*

	Proportion of Deaths per 1,000 of Population.								
	In 1883.			In 1882.			In 1878-82.		
	Urban.	Rural.	Province.	Urban.	Rural.	Province.	Urban.	Rural.	Province.
Cholera	3·64	1·27	1·36	4·79	2·67	2·75	3·43	1·53	1·61
Small-pox	·27	·14	·14	·34	·20	·20	·80	·27	·29
Fevers	13·77	13·81	13 81	15·72	14·00	14·06	16·14	11·70	11·87
Bowel-complaints	3·54	·73	·83	3·93	·81	·92	4·19	·71	·85
Injury	·40	·35	·35	·38	·32	·32	·43	·32	·33
Other causes	5·64	2·18	2·30	5·86	1·98	2·12	5·87	1·64	1·80
All Causes	27·28	18·49	18·82	31·05	20·00	20·41	30·88	16·20	16·75

The extent to which the above-named diseases proved more or less fatal in the Province during the year under review, in comparison with the mortality in 1882 and in the lustrum 1878-82, is indicated in the margin. Thus it will be seen that cholera, small-pox, and bowel-complaints proved less fatal than during the entire period, 1878 to 1882, with which comparison is instituted; that fever was less severe than in 1882, but considerably more so than in the quinquennium 1878-82; and that the casualties from injury and other causes were slightly higher than in 1882 and the lustrum 1878-82.

Increase or Decrease in 1883 as compared with 1882 and the quinquennium 1878-82.

	With 1882.		With 1878-82.	
	Increase per mille.	Decrease per mille.	Increase per mille.	Decrease per mille.
Cholera	...	1·39	...	·25
Small-pox	...	·06	...	·15
Fever	...	·25	1·94	..
Bowel-complaints	...	·09	...	·02
Injury	·03	...	·02	...
Other causes	·18	...	·50	...
All Causes	...	1·59	2·07	...

19. *Mortality in Bengal, Behar, Orissa and Chota Nagpore.*

	In 1883.					In 1878-82.				
	Cholera.	Small-pox.	Fever.	Bowel complaints.	All Causes.	Cholera.	Small-pox.	Fever.	Bowel complaints.	All Causes.
Bengal	1·55	·08	16·43	·63	21·11	1·49	·10	1[illegible]·70	·63	18·02
Behar	1·19	·13	11·29	·76	15·98	1·65	·25	10 03	·81	14 62
Orissa	1 82	·82	6·79	1·10	18 86	3·26	1·53	7·55	2·75	20·75
Chota Nagpore...	·37	·10	11·83	·83	15·49	·82	·26	10·44	1·23	14·46

This table indicates that, relatively, cholera, small-pox and bowel-complaints prevailed with the greatest severity in Orissa, and fever in Bengal, and that in casualties from all causes Bengal took precedence. In comparison with the mortality during the quinquennium 1878-82, cholera was more fatal in Bengal, but less so in Behar, Orissa and Chota Nagpore; small-pox exhibited less activity in all the four divisions; fever proved more severe in Bengal, Behar and Chota Nagpore, but prevailed with scarcely any abnormal degree of fatality in Orissa; and bowel complaints caused less loss to life in Behar, Orissa and Chota Nagpore, but maintained an equal death-rate in Bengal: the culminating result being that, Bengal, Behar and Chota Nagpore exhibited higher and Orissa lower mortality from all the death-causes combined.

20. *Seasonal incidence of the Diseases.*

Months.	Deaths in 1883.	Months.	Deaths in 1878-82.
December	146,722	December	122,660
November	134,038	November	115,713
January	114,446	October	96,174
October	108,138	January	95,805
September	101,659	April	93,651
August	100,169	August	87,172
April	98,218	May	86,627
July	91,173	March	86,241
May	90,491	September	83,598
March	89,628	July	83,183
February	87,634	June	81,032
June	83,360	February	76,695

The figures again indicate that the cold or drying season is the unhealthiest in the Province, as it is during this period that cholera, fever and bowel-complaints cause the greatest loss to life.

21. *Mortality according to Sex.*

	In 1883.			In 1882.			In 1878-82.		
	Deaths.	Ratio per mille.	Proportion per cent. of male to female deaths.	Deaths.	Ratio per mille.	Proportion per cent. of male to female deaths.	Deaths.	Ratio per mille.	Proportion per cent. of male to female deaths.
Males	676,175	20·59	118	738,000	22·50	120	615,472	18 74	124
Females	569,501	17·08		611,561	18·37		493,079	14·79	

Mr. Bourdillon has shown conclusively in his Census Report of 1881, page 65, that in Bengal the death-rate of the two sexes, with a nearly equal population (99 males to every 100 females), should bear a close approximation to each other. The figures in the above table indicate an improvement in this respect during the year under review in comparison with the proportion of male to female deaths in the lustrum 1878-82.

22. *Mortality according to Age.*

	In 1883.				In 1882.			
	Ratio per mille.			Proportion per cent. of male to female deaths.	Ratio per mille.			Proportion per cent. of male to female deaths.
	Urban.	Rural.	Province.		Urban.	Rural.	Province.	
Under 1 year	178·70	96 16	99·22	122	184·15	86·31	89·91	121
1 to 5 years	34·53	19·41	19 82	108	39·98	21·08	21·59	109
5 to 10 years	17 33	10 35	10·53	130	21·27	11·89	12·14	131
10 to 15 "	14 05	9·19	9·35	150	16·41	11·00	11·18	137
15 to 20 "	20·60	13·06	13·34	107	27·49	13·86	14·17	113
20 to 30 "	19·05	13·32	13·58	109	22 10	15·12	15·43	110
30 to 40 "	20·00	14·79	15·01	132	23·68	16·70	70·01	134
40 to 50 "	22·19	19·57	19·38	141	26·03	21 60	21·81	145
50 to 60 "	31·67	28·31	28·46	117	36·52	30·72	30·98	122
60 years and upwards ...	55 85	43·20	43·72	97	62·07	45·62	46·29	101

The returns of the deaths of adults cannot be relied on, as the lower orders of natives generally are ignorant of their own ages. It is notorious that infants perish in considerable numbers in Bengal, and there is some approach to this truth in the record of infantile mortality revealed by the above table, for we find that the casualties among infants was noticeably high; but the urban ratio is still below that of England—182·6 per 1,000 of population of that age—and the rural ratio very much in defect. The next highest death-rate was furnished by the aged. The mortality among infants, children and the aged was represented at its maximum in the *urban* areas, for the death-rates among infants ranged from 200 to 781 per 1,000 of population in 23 towns, those among children from 40 to 102 per 1,000 in 20 towns, and those among old men from 40 to 268 per 1,000 in 45 towns. Referring to the districts, the highest proportions of death at these ages were recorded in those named below:—

Under 1 year.		1 to 5 years.		50 to 60 years.		60 years and upwards.	
Poori ...	329	Rajshahye ...	42	Nuddea ...	45	Nuddea	80
Balasore ...	235			Julpaiguri ...	41	Burdwan	71
Patna ...	211			Burdwan ...	40	Backergunge ...	69
Backergunge ...	202			Rajshahye ...	40	Jessore	62
						Birbhum	59
						Pubna ...	59
						Midnapore ...	59
						Dacca	59
						Balasore	57
						Poori	56
						Noakhalli	54
						Bankura	53
						Howrah	52
						Hughli	52
						Rajshahye... ...	51

23. *Mortality according to Class or Nationality.*

	Ratio per 1,000 of Population.								
	In 1883.			In 1882.			In 1878-82.		
	Urban.	Rural.	Province.	Urban.	Rural.	Province.	Urban.	Rural.	Province.
Christians	22·68	9·70	12·52	22·47	12·00	14·20	22·77	9·61	12·48
Hindus	27·76	18·05	18·45	31·86	20·00	20·48	31·24	16·28	16·89
Mahomedans	26·39	19·70	19·91	29·92	20·40	20·71	30·13	15·95	16·40
Buddhists	16·06	11·72	11·84	15·61	2·52	2·88	20·24	2·70	3·18
Other races	11·74	15·22	15·21	17·02	16·08	16·00	28·60	17·04	17·67

Of the three principal nationalities, the Christians furnished the lowest and the Hindus and Mahomedans nearly equal death-rates throughout from 1877 to 1883, except that during the year under review the Mahomedans suffered somewhat more severely than the Hindus.

Deaths among Non-Asiatics and Mixed Races.

24. The recorded deaths among these classes amounted to 711 (462 males and 249 females), and of this number 86 died from cholera, 1 from small-pox, 124 from fever, 83 from bowel-complaints, 28 from injury and 389 from other causes.

25. *Births and Deaths in Calcutta in 1883 compared with the same events in the Bengal towns.*

	Births.		Deaths.							
			Ratio per 1,000 of population.							
	Ratio per 1,000 of population.	Proportion per cent. of male to female births.	All Causes.	Cholera.	Small-pox.	Fever.	Bowel-complaints.	Injury.	Other causes.	Proportion per cent. of male to female deaths.
Calcutta	17·15	103	28·14	4·70	·16	7·94	3·01	·49	12·13	145
Bengal towns	22·08	114	27 28	3·64	·27	13·77	3·54	·40	5·64	123

The comparison does not reflect disadvantageously on registration in the Bengal towns, for the births appear to have been better recorded, and the death returns exhibit under all heads more or nearly equal results, excepting those of cholera and "other causes." The deaths from the former are subject to fluctuations; but those from the latter are undoubtedly under-registered to a great extent.

26. *Mortality of Natives in the 11* Cantonments in Bengal.*

		1883.	1882.
Population		33,091	56,168

	Deaths in 1883.	Ratio per mille. In 1883.	Ratio per mille. In 1882.
All Causes	731	21·50	13·36
Cholera	63	1·85	·96
Small-pox	5	·14	·03
Fever	387	11·38	7·5[illegible]
Bowel-complaints	57	1·67	1·33
Injury	16	·47	·12
Other causes	203	5·97	3·38

Compared with 1882, the gross mortality, as well as the casualties from each specific cause, were considerably greater in the year under review. The highest death-rate (61·16 per 1,000 of population) again occurred in the Hazaribagh Cantonment, and the lowest (·61 per 1,000) in Fort William, in which only one death from "other causes" took place. In the rest of the cantonments the casualty-rates ranged from 10·61 to 34·88 per 1,000.

* No returns were received from Berhampore, Julpaiguri, Dacca and Bhagulpore, as troops were not located in these Cantonments during the year.

27. Port of Calcutta—*Sickness and Mortality among European Seamen.*

1	2	3	4	5						6					
				IN 1883.						IN 1882.					
SICKNESS.	Population as per Census of 1881.	Population as per estimate of the Health Officer.	Number who visited the Port.	Admissions into hospital.	Deaths.	Ratio per cent. of deaths to treated.	Ratio of deaths per 1,000 of the number who visited the Port.	Ratio of deaths per 1,000 of population: As shown in column 2.	Ratio of deaths per 1,000 of population: As shown in column 3.	Admissions into hospital.	Deaths.	Ratio per cent. of deaths to treated.	Ratio of deaths per 1,000 of the number who visited the Port.	Ratio of death per 1,000 of population: As shown in column 2.	Ratio of death per 1,000 of population: As shown in column 3.
In Hospital.															
Cholera	2,791	1,860 in 1883; 1,792 in 1882.	21,005	65	37	56·92	1·76	13·25	19·89	64	41	64·06	2·07	14·60	22·87
Diarrhœa				164	...	......	......	......	......	143	2	1·39	·40	·71	1·11
Dysentery				90	4	4·44	·19	1·43	2·15	146	8	5·47	·04	2·86	4·46
Fever, enteric ...				...	...	......	......	......	...	8	6	75·00	·30	2·14	3·34
„ malarious ...				323	4	1·23	·19	1·43	2·15	251	5	1·99	·25	1·79	2·79
„ simple ...				114	...	......	......	......	......	186	...	......	......	......	......
Scurvy				14	...	......	......	......	...	28	..	......	......	......	......
Small-pox				5	...	......	......	......	......	...	...	......	......	......	......
Sunstroke or heat apoplexy				4	3	75·00	·14	1·07	1·61	5	3	60·00	·15	1·07	1·67
Other diseases ...				1,169	33	2·82	1·57	11·82	17·74	1,126	29	2·03	1·46	10·39	16·18
Total ...				1,948	81	4·15	3·85	29·02	43·54	2,257	94	4·16	4·75	33·67	52·46
Out of Hospital.															
Cholera				...	1	......	·04	·35	·53	...	...	......	......	......	......
Sunstroke				...	2	......	·09	·71	1·07	...	2	......	·10	·71	1·11
Other diseases ...				...	7	......	·33	2·50	3·76	...	4	......	·20	1·43	2·23
Total ...				...	10	......	·47	3·58	5·37	...	6	......	·30	2·14	3·34
GRAND TOTAL ...				1,948	91	4·15	4·33	32·60	48·92	...	100	4·16	5·05	35·82	55·80

The figures in the above table show that of 21,005 European seamen who entered the Port, 1,948 were admitted into hospital and 81 died, excluding 10 casualties, which occurred out of hospital, the death-rate being represented by 29·02 per 1,000 calculated on the census population, or 43·54 per 1,000 calculated on the Health Officer's estimated population for this year. Contrasting these figures with the results of the preceding year, both sickness and mortality appear to have diminished, viz. to the extent of 309 in the number of admissions into hospital, of 13 in the number of casualties, and of 4·65 per 1,000 in the death-rate in relation to the census population, or of 8·91 per 1,000 in relation to the Health Officer's estimated population. Considering the causes of the sickness and mortality, although there was an increase in the number of admissions into hospital of 72 from malarial fever, 21 from diarrhœa, 5 from small-pox, and 1 from cholera, every death cause, except "other diseases," contributed towards the reduction in mortality. Carrying the examination further, it is seen that, judged by the proportion of admissions into hospital of the average strength in the Port, the suffering among the European seamen was less during the year under review than during any of the four preceding years, as indicated by the table submitted in the margin; and that, with regard to the mortality, eliminating cholera, which was a disturbing element, for, although less fatal in 1881 and 1882, it was doubly severe in comparison with its incidence in 1880, the death-rate from the rest of the diseases was lower than in any year of the above quoted period—*vide* the marginally noted figures. On the whole, therefore, the year under review must be pronounced to have been a healthy one, which is a matter for congratulation, and indicative of the care and attention bestowed by the Health Officer on the sanitation of the Port. It is, however, painful to find that the sailor furnishes a considerably higher death-rate than the soldier. The latter, living under the same conditions as the former with regard to climate and drinking water, but subject to superior discipline and supervision, presents a cholera mortality of 2 per 1,000 of strength, and a general death-rate of 10 to 8 per 1,000; while the sailor dies at the rate

Years.	Average strength.	Ratio per 1,000 of admissions into hospital to average strength.
1879 ...	1,000	2120·0
1880 ...	1,400	1432·1
1881 ...	1,350	1332·5
1882 ...	1,792	1259·4
1883 ...	1,860	1047·3

Years.	Average strength.	Number of deaths excluding cholera.	Ratio of deaths per 1,000 of average strength.
1879 ...	1,000	36	36·0
1880 ...	1,400	35	25·0
1881 ...	1,350	32	23·7
1882 ...	1,792	53	29·5
1883 ...	1,860	44	23·6

of 20 per 1,000 of average strength from cholera, and 52 to 16 per 1,000 from all causes.

Deaths during voyage.

28. Fifty-one deaths of European seamen occurred at sea, among a crew numbering 18,746, against the same number in the preceding year. Thirty-five of these deaths occurred by drowning and other accidents, and two from heat apoplexy. No account has been furnished of the rest.

29. *Sickness and Mortality among the Native Floating Population.*

Sickness.	Native floating population as per Census of 1881.	Number who visited the Port.	In 1883. Total deaths among native floating population.	Ratio of deaths per 1,000 of population.	Number of native floating population who entered hospital.	Deaths among this number.	Ratio per cent. of deaths to treated.	In 1882. Total deaths among native floating population.	Ratio of deaths per 1,000 of population.	Number of native floating population who entered hospital.	Deaths among this number.	Ratio per cent. of deaths to treated.
Cholera	23,409	8,666	116	4·56	69	34	49·27	115	4·52	54	27	50·00
Diarrhœa			2	·07	10	2	20·00	1	·03	11	1	9·09
Dysentery			12	·47	12	6	50·00	7	·27	14	4	28·57
Fever, malarious			8	·31	23	1	4·54	26	1·02	31	1	3·22
„ simple			14	·55	......	......	......	......	......	......	......	......
Small-pox			2	·07	9	2	22·22	......	......	7	......	......
Sunstroke or heat apoplexy ...			......	......	......	......	......	1	·03	1	1	100·00
Other diseases			24	·94	90	12	13·33	36	1·41	94	12	12·76
Total ...			178	7·00	212	57	26·88	186	7·32	212	46	21·69

The above table discloses that the sickness and mortality among the native floating population during the year 1883 did not vary much from those which obtained in the preceding year, the deaths numbering 178 against 186, and the casualty rate amounting to 7 per 1,000 of population as opposed to 7·32 per 1,000. Cholera was again the chief cause of death, and carried off an equal proportion of the population as in 1882. The mortality from the rest of the diseases, was inconsiderable. The native Inspector went about tracing cases of sickness, and endeavoured his best to get them removed to hospital. The large number of deaths out of hospital from cholera (82 out of 116) is accounted for by the fact that in many cases the short duration of the disease before terminating fatally did not permit of the attention of the friends of the patient being awakened to its seriousness.

Health and treatment of Lascar crews who proceeded on foreign voyages.

30. The number of these men amounted to 4,783, and 15 deaths were recorded in the official logs as having occurred among them at sea or in foreign Ports, giving a death-rate* of 3·13 per 1,000, against 4·3 per 1,000 in the preceding year. Enquiry elicited complaints by the crews of six steamers and one sailing vessel to the effect that the rations served out were bad. In the case of the sailing vessel and two of the steamers the complaints were withdrawn at the Shipping Office. Excluding one case in which the existing stock of salt-fish having been proved to be bad a fresh supply was laid in, and one case in which compensation was allowed to the crew for rations proved to have been objectionable, the other complaints were not held by the Shipping Master to have been justified. On this subject the Health Officer writes:—"Seeing the tendency of lascar seamen to make complaints on arrival, which for some reason they withdraw when they are called upon to substantiate them at the Shipping Office at the time of their being paid off, it would be advisable to provide for the hearing of these complaints in the presence of the Health Officer at the time of the enquiry at the Shipping Office. The power given to the Health Officer by the Indian Merchant Shipping Act, 1883, which came into force on the 1st January 1884, to require any person examined to make a declaration of the truth of the statement made by him will also discourage the making of complaints which are afterwards to be withdrawn." Several cases of scurvy occurred in one vessel (the *Bayard*) from Demerara, but the lime-juice was found on analysis to be of good quality.

General health of the Province.

31. According to the local reports, the districts occupy, with regard to general health, the relative positions assigned to them below. The asterisks denote that the

districts thus indicated were more unhealthy than they were in previous years.

Good or fair health.

1. Burdwan.
2. Bankura.
3. Birbhum.
4. Hughli.
5. Serampore.
6. Howrah.*
7. 24 Pergunnahs.
8. Jessore.
9. Murshidabad.
10. Bogra.
11. *Backergunge.
12. Tipperah.
13. Chittagong.
14. Noakhalli.
15. Patna.
16. Gya.*
17. Shahabad.
18. Mozufferpore.
19. Chumparun.
20. Monghyr.
21. Bhagulpore.
22. Cuttack.
23. Poori.
24. Balasore.
25. Hazaribagh.
26. Lohardugga.
27. Singbhum.
28. Manbhum.

Bad health.

1. Midnapore.*
2. Nuddea.
3. Khulna.*
4. Dinagepore.
5. Pubna.*
6. Darjiling.*
7. Julpaiguri.*
8. Dacca.
9. Faridpore.*
10. Durbhanga.
11. Sarun.
12. Purneah.
13. Maldah.
14. Sonthal Pergunnahs.*

Very bad health.

1. Rajshahye.*
2. Rungpore *
3. Mymensing.*

The returns indicate that the great majority of the districts improved in health during the year, due to the mitigated severity with which cholera, fever, and bowel-complaints prevailed, particularly the first-named disease, which was widespread and carried off a very considerable number of the population in 1882. The year under review was one in which the harvest, particularly rice, the chief of the staple articles of diet, failed generally to a great extent, owing to deficient, early cessation, or, in a few cases, to excessive rainfall, and as a consequence the prices for food-grains rose (*vide* table in the margin, which also exhibits the rainfall)—a state of matters which, in ordinary course, is expected to prove disastrous to the masses, who are generally ill-fed, even in years of good harvest, ill-clothed, ill-housed, and subject to numerous insanitary influences. The harvest was reported to be below the average in every district, except Poori—in some to a large extent—and the prices for food-grains was higher in all except the Burdwan and Balasore districts. The cases, as gathered from the local reports, in which the normal state of living was disturbed by the high prices for food were few, and may be summed up as follows:—At *Maldah* large numbers of the people, especially in the Bhurind tract, used up, owing to the drought, much of their ordinary water-supply in irrigating their fields, reverted to employment in the silk industry, and were asking for employment on the roads under the Road Cess Department. An application, it appears, has been made to Government for a grant of Rs. 20,000 to open out relief works in the affected tracts in the early part of 1884, if it is found necessary to do so. It is said that at *Khulna* the high prices for old rice compelled many to use new rice, and this is suspected to have increased disease. At the *Jehanabad sub-division*, in Hughli, the rise in the price of food-grains had, to a certain extent, told upon the poorest classes who had to live on short rations. At *Lohardugga*, in order to ward off the effect of the diminished food-supply on public health, relief works were to be started by the Zemindars and Road Cess Department. At *Durbhanga* it is suspected that, owing to the high prices for food, the poor, particularly in the Tajpore sub-division, had a very severe time to go through, and it is expected that this state of things will affect the public health during the current year. At *Monghyr* the same suspicion and opinion are entertained as at Durbhanga.

	Price per maund in 1883.	Average of the three preceding years.	Difference in 1883.	Price per maund in 1882.	Rainfall. In 1883.	Rainfall. Average of previous years.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Inches.	Inches.
Wheat	4 2 0	4 1 1	0 1 5*I*	4 1 0	58·84	66·95
Common rice ...	1 15 1	1 8 6	0 6 7*I*	1 1 9		
Pulses	2 6 6	2 3 5	0 3 1*I*	2 3 6		
Fish	7 9 0	7 1 2	0 7 10*I*	7 3 0		

SECTION VI.

HISTORY OF THE CHIEF DISEASES.

CHOLERA.

Extent of prevalence and fatality of Cholera.

32. The statistics, supplemented by local opinion, indicate that the prevalence and fatality of this dire disease had happily diminished to a very considerable degree during the year under review, in comparison with its incidence during the preceding year, as well as during the quinquennium 1878-82. The following figures support these observations. The disease was present in all the 648 registering circles in the Province excepting 46, prevailing epidemically in only 47 against 115 in 1882, severely in 64 against 118, and mildly in 491 against 376; and it attacked only 6·55 per cent. of the villages against 10·98 per cent. The casualties amounted to 90,439 and the death-rate to 1·36 per 1,000 of population, the reduction on the figures of 1882 being 91,913 deaths, or at 1·39 per 1,000, and on the average of the lustrum 1878-82, 16,107 deaths, or at ·25 per 1,000.

Comparative mortality from Cholera in Urban and Rural circles.

33. The subjoined figures demonstrate that the comparative immunity from the disease enjoyed by the Province, referred to in the preceding paragraph, was participated by both the Urban and Rural circles:—

	In 1883.		In 1882.	
	Deaths.	Ratio per *mille*.	Deaths.	Ratio per *mille*.
Urban circles	8,993	3·64	11,830	4·79
Rural „	81,446	1·27	170,522	2·67

Districts which suffered most.

34. Only the 11 following districts suffered conspicuously from cholera against 28 in 1882 with death-rates ranging from 1·96 to 6·21 per 1,000 of population; and of the whole of the districts (45) only 11 returned higher mortality:—

Districts.	Ratio per *mille*.	Excess or deficit, as compared with 1882.	Districts.	Ratio per *mille*.	Excess or deficit, as compared with 1882.
Nuddea	4·69	1·28 D	Backergunge ...	2·40	2·10 D
Julpaiguri	4·17	4·12 E	Jessore	2·21	3·29 D
Gya	3·73	1·38 E	Darjiling	2·12	1·77 E
24-Pergunnahs	3·47	·07 D	Balasore	2·12	4·09 D
Shahabad	3·21	1·39 E	Cuttack	1·95	2·24 D
Howrah	3·00	·79 E			

Seasonal influence of Cholera.

35. The dry and hot months of April to June are again found to be the months of greatest suffering from cholera, even in a year in which it prevailed with normal intensity, disturbed by epidemic exacerbations only to a small extent. With a heavy fall of rain in June and again in July, the severity of the disease, as usual, declined. The high mortality in January is a continuation of the epidemic prevalence of December 1882.

Months.	Deaths in 1883.	Months.	Deaths in 1878-82.	Rainfall in 1883.
May	13,187	April	16,555	4·65
June	11,389	May	14,514	13·60
April	11,021	June	13,607	2·40
January ...	10,675	July	11,581	·69
July	8,935	March	9,654	14·30
December ...	8,132	December ...	9.589	1·36
August... ...	6,994	August	8,489	12·04
March	6,777	January ...	6.460	1·51
February ...	4,702	November ...	5,267	·46
November ...	3.725	February ...	4,619	·12
September ...	2,613	September ...	3,284	6·72
October ...	2,289	October... ...	2,927	·99
		Total ...		58·84

In *Bengal* cholera prevailed with the most marked severity during the months of January to May, and again during October to December, being most severe in the early part of the year in the Western and Eastern districts, excepting Bankura and Birbhum in the former and Chittagong and Noakhalli in the latter, and in the southern portion of the Central districts. Darjiling and Julpaiguri, comprising the northern portion of the Central districts,

suffered most during May to August. In the winter months the areas of highest suffering were Midnapore, Serampore and Howrah, forming a portion of the Western districts, and the southern portion of the Central districts, excepting Murshidabad.

In *Behar* May to August were the months of prominent suffering, and the disease in this form was confined to its western portion, excepting Sarun and Chumparun.

In *Orissa* cholera was active during the whole of the year, except in October and November; January, February, March and July being the most unhealthy.

Chota Nagpore enjoyed great immunity from the disease throughout the year, except during July and August, in which months Hazaribagh and Lohardugga suffered somewhat severely.

Prevalence of Cholera as delineated by the Cholera Map.

36. A reference to the Cholera Map appended to this Report will show that 33 of the sub-divisions suffered epidemically or severely, the death-rates in them ranging from 21 to 176 per 10,000 of population, against 72 in 1882, with death-rates ranging from 21 to 89 per 10,000, and that the undermentioned sub-divisions were almost free from the disease:—

Districts.	Sub-divisions.	Districts.	Sub-divisions.
Manbhum...	... Sudder.	Lohardugga	... Ranchi.
Purneah ...	... Kudwa and Arareah.	Pubna ...	... Serajgunge.
Chittagong	... Sudder.	Bhagulpore	... Mudehpura and Supool.
Sarun ...	... Sewan and Gopalgunge.	Singbhum ...	... Sudder.
Noakhalli...	... Sudder, Fenny.	Chumparun	... Bettiah.
Sonthal Pergunnahs ...	Pakour, Dumka and Godda.		

Cholera at Fairs.

37. Cholera did not prevail at the great majority of the Fairs held in the Province, although in several of them no sanitary precautions were adopted to prevent its incidence. The exceptions are few, and of these the fair held in January at Gunga Sagor in the 24-Pergunnahs, which lasted for a week, and where about 98,500 people were assembled and all needful sanitary arrangements made, presented the largest amount of cholera, viz. 34 cases, seven terminating fatally. In the rest of the affected fairs the outbreaks were insignificant. At the Tarkessur fair in Hughli, held twice, there occurred three cases of cholera; at the Kartick Baroni fair in Dacca, eight cases, one death; at the Lakutia fair in Backergunge, "slight—" number not stated; at the Barahpore fair in Shahabad, some—number not stated; at the Sorgesur fair in Bhagulpore, two cases; and at the Baroni fair in the Sonthal Pergunnahs, "cholera with four fatal cases broke out." At all the above fairs sanitary precautions for the prevention of the disease were adopted, except at Lakutea in Backergunge and Baroni in the Sonthal Pergunnahs district. The existence of the latter fair was not known—it was believed to have been held for the first time. In the Gya district 47 deaths occurred among the pilgrims who passed through it, and 5 among the coolies in the depôts.

Incidence of Cholera in the districts.

38. Sketches of general and local outbreaks of cholera and the main facts connected with its incidence in the districts are subjoined.

BENGAL.

Cholera in the Bengal division of the Province.

39. The prevalence and fatality of cholera were greater in *Bengal* than in any other division of the Province, except Orissa. Its records indicate that 54,635 deaths occurred in it during the year under review, representing a death-rate of 1·55 per 1,000 among its population numbering 35,073,770, as opposed to 93,306 deaths, or at the rate of 2·66 per 1,000 in the preceding year. The most unhealthy months were January to May and October to December.

40. *Burdwan.*—In this district there was a very considerable decline in the prevalence and severity of the disease. The deaths numbered 1,767, and the death-rate amounted to 1·26 per 1,000 of population, and 6 per cent. of the villages were affected by the disease—the reduction in comparison with 1882

being 3,509 deaths, or 2·53 per 1,000, and 8 per cent. in the number of villages attacked. But some localities suffered conspicuously. These are noted in the margin. Pilgrims pass through Ranigunge, and the Magistrate notes that good drinking water is not available in many places, the majority of the tanks, which abound in the district, being in an extremely filthy state.

	Ratio per *mille.*		Ratio per *mille.*
Ranigunge town ...	6·76	Kalna town ...	2·10
Burdwan " ...	3·55	Katugram thanah ...	2·10
Purbasthali thanah ...	3·46	Monteswur " ...	1·91
Shahibgunge " ...	3·01		

41. In the *Bankura* district also the suffering was much less. The deaths amounted to 464 against 1,954 in the preceding year, the death-rate to ·44 against 1·87 per 1,000, and the percentage of villages attacked to 2 against 5. The incidence of the disease was notably severe in only the Sonamukhi town and thanah, where 5·70 and 1·73 per 1,000 of the population perished, respectively. It appears that the cholera, which was severely prevalent in the north and east of the district in 1882, disappeared from this area in the cold weather of that year, but continued to prevail in Sonamukhi epidemically up to April 1883, and with subdued severity in May and June, after which it ceased. Both the urban and rural areas of Sonamukhi are very densely populated and filthy, and have numerous foul tanks and cesspools; and the Magistrate says that until this state of matters is remedied this tract will continue to be visited by the disease in virulent form. It was observed that cholera was absent from almost the entire district from July to the end of the year, and that the Khatra thanah entirely escaped the scourge. Wherever cholera outbreaks occurred, the Magistrate made it a point to have tanks set apart for different purposes, drinking, bathing, &c.; the excreta and vomit buried; the cases isolated, &c.,—very commendable action on his part.

42. *Birbhum.*—There was no excessive prevalence of cholera in this district. Only 2 against 10 per cent. of the villages were affected, and the mortality, represented by 297 deaths, or at ·37 per 1,000 of population, against 2,593 deaths, or at 3·26 per 1,000 in 1882, was lower than that of any year within the past decade, excepting 1875. Most of the disease occurred in April and May and again in November and December. The first outbreak was confined to thanahs Dubrajpore and Sakulipore, the latter, situated in the Gangetic valley and on the direct route of pilgrims, suffering most persistently; and the second outbreak chiefly to thanah Soori. It was noted that the Rampurhat town, which has hitherto been very unhealthy and where a severe outbreak of cholera occurred in 1882, exhibited a marked improvement this year, referable, according to the Magistrate, to three of the best tanks having been set apart for drinking and culinary purposes only. The circumstances connected with the attack by cholera, in the Soori town, of Mr. Cockburn, the District Superintendent of Police, and his two grown-up sons, furnished by Dr. Roy, possess some interest. Two days prior to the occurrence there was a solitary case of the disease in the bazar and a few others at a mela at Ramessar in thanah Soori, ten miles north-east. The air was hot, blowing as if from a furnace; the temperature in the shade was 111°; and in such enervating weather father and sons used to go out riding every morning 16 to 20 miles, coming back under a blazing sun, and, soon after their return, quenching their parched throats with successive tumblers of butter-milk and ice. The well in their compound had run dry, and its water, on chemical analysis, was found to contain ·01 of albuminoid ammonia, and was teeming with vegetable fungi and spores. Father and sons fell victims to the disease within 24 hours after attack. Dr. Roy also submits the following facts which came under his personal observation, indicating how important it is to dispose properly of choleraic discharges and to prevent the contamination of the water-supply. He writes: "I have already obeserved that there was no case of cholera in the district in September. By some fortunate coincidence we are in possession of facts to trace its first importation in thanah Soori after that date. The first case occurred in the person of a zemindar of Nagoree (in thanah Soori, population 705) who, in October, went on a visit to a friend in Panagore in the Burdwan district, and stayed with him for three days. In that house, unknown to him, there had been two or three days previously some deaths from cholera. On the third day of his visit he was taken ill with purging, and he straightway returned home, where

the disease developed itself and he died the next day at his own residence. Three members of his house got cholera in succession after two or three days interval of each, and all but one succumbed. A maid servant who washed the clothes of the deceased was the next victim, and then another woman, till it spread in the whole village and created such a panic that the people began to disperse through fright, but not until the spark had been lit in the next adjacent village, which went through a similar ordeal. Wherever the fugitives went, they carried the seed of disease in their train, and I have no doubt it would have formed a very interesting inquiry if it could have been tracked out in its predatory ramble. Thus Dubrajpore, Rajnuggar, Madhyepore (thanah Soori, population 436), and other villages came to be affected in their turn, and each contributed its mortality. In Kaniepore, three miles west of Soori, with a population of 723, there occurred seven deaths out of ten cases, out of which five occurred in one house, two in another, and three in separate houses amongst their neighbours. It turned out on personal investigation that the first case occurred in a house four days after a man and wife with two children came and took shelter from Madhyepore when cholera was raging in that village. None of these, however, got the disease, but a child of their host, who recovered. This was followed by four cases in that house and five more in other houses, as have been detailed above. Whether to call this simultaneous outbreak a coincidence, or that the appearance from infected locality only hailed the advent of the disease through the medium of clothes, is more than I am in a position to state. For if the latter point is conceded, it indicates strongly the necessity and importance of quarantine in cholera. Now all these cases occurred within a limited area, whilst the village Kuddea (thanah Soori, population 1,924) separated from it by the intervention of a road, and having more than double the population, and conspicuous by absence of any sanitary arrangement, escaped without a single occurrence. Kaniepore is inhabited by Mahomedan population. They have a tank in their midst, which serves for drinking, washing and culinary purposes. They said their females being zenanas, could not go any distance to fetch water. They unhesitatingly declared that they washed their clothes, soiled with the discharge of patients, in that very tank which is used by the majority of the people for drinking. I say majority, because some have got wells in their houses which they exclusively use; and it is a noteworthy phenomenon that no case of cholera occurred in those families. If, with these facts, which are similar to those I have reported year after year, one still denies the communicability of cholera, it can be explained on the view that nothing is more difficult than to convince the sceptical."

43. In the *Midnapore* district the percentage of villages covered by the disease was the same as in the preceding year, viz. 7, the deaths numbered 3,766, and the death-rate was 1·49 per 1,000 of population, against 3,460 and 1·37 per 1,000, respectively. January to May and November and December were the worst months. Thus it is seen that there was an accession of the disease during the year under review, and the Civil Surgeon is of opinion that it is gradually increasing. It did not prevail epidemically, but scattered sporadic outbreaks were frequent.

	Ratio per *mille*.		Ratio per *mille*.
Ramjibanpore town	5 95	Contai thanah ..	3 08
Raghunathpore thanah	4 70	Ghattal , ...	3 00
Egra ,,	4 36	Chundrakona town	2 93
Khajri ,,	4 20	Suttahatta thanah ...	1 97
Nundigram ,,	4 06	Chundrakona ,, .	1 91

The areas of greatest suffering are marginally indicated. The Civil Surgeon notes that the portion of the district bordering on the sea and the river Hughli, (such as Raghunathpore, Khajri, Contai, Ghattal and Suttahatta) as usual, suffered very much, and the Magistrate observes that in this littoral tract there is almost everywhere a great want of good drinking water. The disease was specially prevalent in March in villages Khorar and Woodoygunge in the Ghattal sub-division. These villages are particularly filthy, very densely populated, and in great need of sanitary arrangements. An outbreak which occurred in the Dantun thanah is said to have been originated by pilgrims. Binpur and Garbetta suffered the least from the malady, and this immunity is attributed to the fact that these thanahs are largely inhabited by Sonthals who are far more particular than other natives about the water they drink. At the instance of the Magistrate, and under sanction of Government, pilgrims are now prevented from passing

through the town of Midnapore, and are compelled to use the road without the town, which was provided for them long ago but which they did not generally use.

44. *Hughli.*—In this district 1,352 deaths were recorded, or at the rate of 1·33 per 1,000 of population, and 9 per cent. of the villages were attacked. The corresponding figures of the preceding year are deaths 1,473, death-rate per 1,000 1·45, percentage of villages attacked 13. Excluding Serampore, the mortality in Hughli was somewhat higher in comparison with 1882. The months of greatest suffering were January to May and October to December, and the places named in the margin suffered with marked severity. It will be observed that the disease in its severest form was almost confined to the towns. Of local outbreaks one occurred in the cooly depôt at Champdani brick-fields, and was attended with 27 deaths, and another with 17 fatal cases took place among the coolies working on the Railway line near Tarkeswar. The latter outbreak ceased as soon as the unaffected coolies deserted, and it was attributed to the fact that a large number of them were crowded together without latrines or sanitary arrangements of any kind. A few cases of the disease were observed in March among the coolies of Messrs. Shaw, Finlayson and Company at Mugra. These coolies were travelling from Ranigunge by rail to Dhubri *viâ* Mugra. The Agent of the Company omitted to take proper care of the patients, and was prosecuted and fined on conviction. Steps were promptly taken to arrest the progress of the disease. At Serampore it was remarked that the winter prevalence of the disease was this year of a very severe and fatal type.

	Ratio per *mille.*		Ratio per *mille.*
Uterparah town	8·53	Serampore thanah ..	2 77
Boidyabatti „ .	6 52	Ballagarh „	2 63
Serampore „	4 90	Hughli „ .	2 45
Hughli „ ..	3 77	Singur „ .	2 86

45. In the *Howrah* district the disease prevailed more extensively and fatally than in the preceding year. 24 per cent. of the villages were overrun by it against 17 per cent., and the deaths amounted to 1,909, or at 3·00 per 1,000 of population against 1,407, or at 2 21 per 1,000. January to May and October to December were the most fatal months, and the marginally noted areas furnished the highest mortality. No information has been offered by the Civil Surgeon relating to the cholera history of the year, except that the malady did not prevail epidemically.

	Ratio per *mille*		Ratio per *mille*
Howrah town ..	6 18	Ulubaria thanah ..	2 48
Shampore thanah .	5 57	Domjor „ .	2 21
Juggatballabpore thanah	2 86		

46. 24-*Pergunnahs.*—In this district cholera prevailed with nearly the same severity as in the preceding year; but it was considerably less widespread. The recorded mortality was 6,499, or at 3·47 per 1,000 of population against 6,622, or at 3·54 per 1,000, and 16 per cent. of the villages were affected against 20. The largest number of deaths occurred during the months of January to May and October to December, and the areas of greatest suffering are those mentioned in the margin. It will be noticed that the Suburbs of Calcutta heads the list. During every year of the past decade, excepting 1880, the mortality from cholera in this large and important Municipality has been very high, ranging between 7 and 12 per 1,000 of population. In my recent inspection, while observing many commendable improvements which had been effected in it, I noticed the existence of many insanitary conditions which no doubt favour cholera outbreaks. The Civil Surgeon reports that the disease has been observed to prevail annually in October, with marked severity, in some of the villages in Cossipore and Chitpore in this Municipality; that in these localities coolies congregate for employment during the jute season, that there being no houses available, they put up rough temporary huts in which they live crowded together without any regard to sanitation; and that when cholera breaks out, the early cases generally occur among them. At Entally, in the same Municipality, the cholera mortality is swelled by the inclusion in it of the casualties occurring in the Campbell Hospital, which, while it admits patients

	Ratio per *mille*		Ratio per *mille*
Suburbs of Calcutta	8 65	Jainagar thanah ...	3 34
Mathurapore thanah .	8 20	Diamond Harbour thanah ..	3 16
Naihati town	7 05	Augurpara town ...	3 16
Nawabgunge „ .	5 55	Sonarpore „ ..	3 13
Barrackpore thanah .	4 67	Rajpore thanah ...	3 02
North Suburban town	4 63		
Kalpi thanah .	4 51		

from every part of Calcutta, records deaths at the Entally thanah, within the boundaries of which it is situated. An outbreak of cholera occurred in the commencement of the year at the Railway cooly depôt at Nagra, and spread gradually over nearly the whole sub-division of Diamond Harbour, where it prevailed in almost epidemic form. The mortuary records indicate that this outbreak continued up to June, lingered with subdued severity during July, August and September, and resumed its original activity during the remainder of the year. On the 21st March the Agent to the Eastern Bengal Railway Company reported that cholera had broken out at Kanchrapara among the coolies proceeding to Assam, among the railway workmen, in the bazar, and in the villages adjacent to Kanchrapara. The affected localities were stated to be extremely filthy, defœcation being carried on anywhere and everywhere, and the water-supply from the tanks and railway cuttings very bad. It was suspected that this and all such outbreaks of the disease were introduced by these coolies, who it appeared were not, as before, medically examined before being allowed to leave Sealdah. Upon receipt of this report the Magistrate of the 24-Pergunnahs was desired to adopt immediately the necessary steps to put the place into a proper sanitary condition, and to report the arrangements he would suggest for the proper care, treatment, and medical examination of the coolies, and the Deputy Sanitary Commissioner, Metropolitan Circle, was requested to proceed to Kanchrapara and report upon the cholera prevailing there. From the latter officer's report it appeared that the coolies come down from up-country by the East Indian Railway as far as Mugra, walk down to Bansberia, cross the Hughli river, and then join the Eastern Bengal Railway at Kanchrapara; that the batch of coolies referred to by the Agent of the Eastern Bengal Railway had, on arrival at Kanchrapara, two cases of cholera among them, of whom one died at the station and the other at the cooly depôt; and that the disease broke out among the large body of workmen of the Eastern Bengal Railway and also among the coolies belonging to a contractor—the general inference being that coolies passing Kanchrapara bring cholera and other diseases with them. It appeared, moreover, that no care whatever is taken of the coolies during their journey by rail, and that they are packed in the trains like goods. The Deputy Sanitary Commissioner, Metropolitan Circle, observed that the arrangements made for the coolies were not satisfactory, and suggested that a shed should be provided for them between Mugra and Kanchraparah, where they might rest, have their sick treated, and be medically examined before being permitted to proceed by rail from Kanchrapâra; those found unfit for the journey being detained. The Magistrate of the 24-Pergunnahs reported that the only feasible plan would be to insist on the establishment of proper depôts by each contractor near or at Kanchraparah, and to appoint a Government Assistant Surgeon for the medical examination and treatment of the coolies, and that his salary should be borne by the contractors at the rate of two annas per cooly examined. The whole question was submitted to Government for favourable consideration of the above suggestions, and with a further recommendation that, as the coolies travel by rail in batches of 100 to 200, a native medical subordinate be deputed to accompany them, with instructions to separate from their number, at convenient stations along the line, where proper medical attendance can be secured, any that may be attacked by cholera, &c., during transit. A smart outbreak of the disease was reported to have occurred in October in the villages of Guriffa and Nyehatti on the east bank of the Hughli river opposite Chinsurah. On enquiry the Civil Surgeon illicited the following facts: The disease was almost entirely confined to the village inhabited by the coolies working in the Gouripore Mills, and was suspected to have been imported from Bally. The Gouripore village consists of large, roomy, mud huts, situated on high land, a small bund or embankment separating it from the village of Guriffa, where only three cases had occurred from the 8th, the date the disease appeared, up to the 19th, the date of the Civil Surgeon's visit, against 42 in the mill village, although the former is situated on lower land, embeded in jungle, and contains foul tanks. There were about 2,000 workmen, of whom rather more than half lived in the Guriffa village and the remainder in the mill village. These people, both men and women, indulge in intoxication in country spirits, of which a plentiful supply is obtainable. They earn

Rs. 12 per mensem, of which they spend Rs. 4 in liquor. The mill Native Doctor attended the sick at their houses. This the Civil Surgeon considered a bad arrangement, amounting almost to no treatment at all, and suggested that a hospital be provided, where the sufferers could be treated systematically, and where their clothes, excreta, vomit, &c., could be properly dealt with. The Mill Manager and the local officers exerted themselves energetically to arrest the progress of the disease. The Municipality employed persons to clear the jungle and drains, and served notices to several people to clean their tanks and remove the filth, &c., from their houses. The Sub-divisional Officer, under the orders of the Magistrate, caused the Police to see that dead bodies were buried or burnt immediately after death, with clothes and bedding; that the clothes, &c., of the sick are not washed in the river or tanks; and to prosecute people committing nuisances.

47. The *Nuddea* district heads the list of districts most severely affected by cholera during the year under review; but, in comparison with the preceding year, a marked decrease is observed in both the prevalence and fatality of the disease. The area covered by it is represented by 35 per cent. of the villages against 52 per cent., and the mortality amounts to 7,771, or at 4·69 per 1,000 of population, the figures of 1882 being 9,901 deaths, or at 6·58 per 1,000. The months of severest suffering were January to May and November and December, and the most conspicuous death-rates were presented by a large number of the registering circles—*vide* the following list:—

	Ratio per *mille.*		Ratio per *mille.*		Ratio per *mille.*
Jaguli thanah ...	15·29	Santipore thanah ...	6·78	Chuadanga thanah ...	5·13
Chagda „ ...	10·97	Kishengunge „ ...	6·69	Noboddip town ...	4·04
Hanskhalli „ ...	10·85	Damurhuda „ ...	6·61	Kishnaghur „ ...	3·53
Chapra „ ...	9·82	Kishnaghur „ ...	6·53	Kalupol thanah ...	3·52
Ranaghat „ ...	8·93	Santipore town ...	6·43	Kushtea „ ...	2·42
Kaligunge „ ...	8·54	Tehatta thanah ...	6·25	Naupara „ ...	1·91
Nakshipara „ ...	7·88	Jabunnagar „ ...	6·23		

The Civil Surgeon's report again furnishes no special information bearing on this epidemic, except that it was noticed that the towns suffered more severely than the rural areas, an observation which is not supported by the mortuary figures.

48. *Jessore.*—In this district 15 against 27 per cent. of the villages were affected by cholera and 4,293, or 2·21 per 1,000 of the population died, against 10,676, or 5·50 per 1,000 in 1882, showing that the severity of the disease had declined considerably. Nevertheless, the circles named in the margin furnished very high death-rates. The months in which the highest mortality occurred were January to May and December. The sanitary reports furnish no particulars regarding the severe suffering in these areas.

	Ratio per *mille.*		Ratio per *mille.*
Bongong thanah ...	10·47	Gadkhalli thanah ...	3·24
Gaighatta „ ...	7·30	Keshubpur „ ...	2·90
Garapota „ ...	6·55	Monirampur „ ...	2·31
Sarsha „ ...	6·02	Kotwali „ ...	2·18
Kotchandpur „ ...	3·90	Jessore town ...	2·00
Jhenida „ ...	3·39		

49. The *Khulna* district presented 1,695 deaths, or at 1·56 per 1,000 of population from 17 per cent. of the villages. The corresponding figures of the preceding year were 3,299 deaths, or at 3·05 per 1,000, and 22 per cent. of villages attacked: thus indicating a great decline in both the prevalence and fatality of the disease. The unhealthiest months were January to May and November and December, and the areas of greatest suffering were the two named in the margin. The disease prevailed in sporadic form, and was nowhere epidemic. Of local outbreaks the following are cited:—Eleven cases with six deaths occurred in December among the coolies employed in the Government brick-field. The atmosphere was at the time loaded with moisture, consequent on a few showers having fallen a few days before, followed by others up to the 31st December. The coolies were crowded in their huts; they consumed new rice and inferior food; and the ground was damp. A smart outbreak occurred in the Kendla village in the Bagirhat sub-division. It originated in a boy who had gone to Debirhat,

	Ratio per *mille.*
Assasuni thanah	3·81
Paikgacha „	3·80

situated on the river bank on the boat route between Bagirhat and Khulna, and was there attacked. He was at once brought home by a fellow-villager, who also was affected by the disease the same day and died. After this, it spread rapidly in the village, which was in a very insanitary condition. No care was taken to arrest the progress of the disease; on the contrary, bedding and clothes, tainted with cholera excreta, were washed in the ponds used for drinking purposes. It was noted that cholera was not present in Debirhat nor in the adjacent villages when the boy visited the locality.

50. In the *Murshidabad* district the severity of the disease had diminished notably. Only 6 per cent. of the villages were affected by it, and 1,181, or ·96 per 1,000 of the population died, against 16 per cent. of villages attacked and 3,583 deaths, being at the rate of 2·92 per 1,000, in 1882. April and May were the worst months, and the areas named in the margin were the unhealthiest. The sanitary reports do not contain any noteworthy particulars referring to the disease, except that in a severe outbreak of the disease which occurred in city Murshidabad in April, in addition to the measures adopted by the Municipality to afford relief to the sufferers and to arrest the progress of the disease, the Nawab Bahadoor of Murshidabad entertained three medical practitioners to visit the sick in their houses, caused a large tank at the back of the Nizamut stables and several other tanks in different parts of the city to be cleaned out and thrown open to the public for the supply of water for drinking and culinary purposes.

	Ratio per *mille.*		Ratio per *mille.*
Murshidabad town ...	4·40	Gokarn thanah ...	2·10
Nowada thanah ...	3·13	Bhartpore „ ...	2·00
Berhampore town ...	2·24		

51. *Dinagepore.*—In this district cholera exhibited no marked severity. It was confined within only 1·53 per cent. of the villages, and the mortality amounted to only 641, or ·42 per 1,000 of population. It prevailed with some severity during the months of May and June, the other months of the year being almost free from it. It was entirely absent from the Dinagepore town, and the only localities which suffered in any degree approaching to severity were thanahs Gungarampore (1·71 per 1,000), Porsha (1·62 per 1,000), Parbatipore (1·57 per 1,000), and Bansihâri (1·07 per 1,000). Pilgrims from Cooch Behar from both sides of the Teesta river passed through Parbatipore *en route* to Maldah. The disease was raging in Maldah, and the Civil Surgeon says that these pilgrims on their return introduced it to Parbatipore. The Magistrate adds that in his experience this was the worst cholera year in Cooch Behar, and that the pilgrims who go at a certain time every year to deposit a piece of bone from the body of any of their relatives who may have died, in the sacred water of the Ganges, frequently bring back with them the seeds of cholera. Gungarampore is situated on the left bank of the Purnabhaba river where traders from Maldah congregate, especially in the Nya Bazar, the trade centre of the locality. At Porsha boats from other localities assemble.

52. *Rajshahye.*—There was less cholera in this district than in several previous years. The returns of this year record 2,079 deaths, or at the rate of 1·55 per 1,000 in 7 per cent. of the villages against 2,789 deaths, or at 2·08 per 1,000 in 9 per cent. of the villages in 1882. The worst months were January, March to May, and November and December, and the areas given in the margin suffered the most. The sanitary reports do not furnish any information of interest worthy of reproduction here.

	Ratio per *mille.*		Ratio per *mille.*
Charghat thanah ...	4·42	Panchpore thanah ...	2·35
Putia „ ...	2·98	Beauleah town ...	2·07

53. In the *Rungpore* district there was a small accession of cholera. The deaths numbered 2,134 against 1,770, the death-rate amounted to 1·01 per 1,000 against ·84 per 1,000, and the percentage of villages affected was four against three in 1882. The disease attained epidemic intensity in May, prevailed virulently throughout June and July, and lasted with considerably abated severity to the end of the year. Singularly, it was during the three months of severest suffering (May to July) that the largest amount of rain fell, *viz.*, 34·43 inches against 29·75 during the remaining nine months. The only registering circles which returned noticeably high death-rates are thanahs Ulipore (2·40 per 1,000) and Nageshwari (2·35 per 1,000).

54. *Bogra* and *Pubna.*—There was very little cholera in these two districts, and compared with 1882 there occurred a considerable abatement of the disease, particularly in the latter district. None of the registering circles in either suffered with any noticeable severity. The figures illustrating these observations are given in the margin.

	Deaths.		Ratio per *mille.*		Percentage of villages attacked.	
	1883.	1882.	1883.	1882.	1883.	1882.
Bogra	215	1,461	·33	1·98	2	6
Pubna	239	5,123	·18	3·90	2	22

At an outbreak of the disease in the village of Thontonia, close to the southern limit of the Bogra Municipality, it was ascertained that a very unwholesome tank existed in the centre of the village and a great deal of jungle in its neighbourhood which shut out both light and air, and that cow-dung had been accumulated very largely for manure in the compound of the house in which the disease first appeared. In Pubna the disease prevailed sporadically throughout the year, except in January, when it was slightly severe as a continuation of the outbreak which was actively prevalent during the latter half of 1882. Dr. Dutt says that the disease is not connected in any way in this district with pilgrimages.

55. *Darjiling.*—In this district cholera prevailed severely; considerably more so than during several past years. The reported deaths amounted to 332 in 8 per cent. of the villages, against only 55 in 1882, and the death-rate to 2·12 against ·35 per 1,000 of population. The months in which the disease prevailed most virulently were May to August. In fact, it may be said that it was limited to these months, the other months exhibiting very little of it. The areas which furnished the highest deaths were thanahs Kurseong (3·78 per 1,000), Phansidewa (2·87 per 1,000), and Darjiling (·97 per 1,000). The Civil Surgeon has good reason to believe, from data collected from some of the tea gardens, that the recorded mortality has been greatly under-stated. He estimates it at ten times the rate returned by the Police. Commencing in the Terai, the disease spread over the whole district with epidemic virulence, excepting the large hill tract east of the Teesta and several villages west of that river. Localities which had not been visited since 1877 were invaded this year; tea gardens and other places further in the hills than Darjiling were attacked; plains and hills were both affected; the Darjiling Municipality, at an elevation of over 7,000 feet, did not entirely escape. No particular rule was followed by the disease; it visited one garden or some particular cooly lines in one garden, while it was absent from the next garden with coolies living under very much the same conditions as in the affected garden. The Civil Surgeon, Dr. Joubert, states that in all cases that came under his personal observation the disease appeared to break out in places where some local insanitary condition existed, such as accumulation of filth, overcrowding, contaminated water-supply; or it resulted from some indiscretion in diet. He instances the following cases in support of this statement. At the Tumsong busti, where some cases of cholera occurred, the first (with fatal result) in the person of a stranger who had only come from Nepal three days previously, the water-supply is obtained from springs and is of bad quality; but it was remarked that after hydrant water had been supplied to the inhabitants by means of bamboo pipes, no fresh cases occurred among them. About a mile from the Railway station of Kurseong an outbreak occurred, during which five natives and one European died. The water-supply for both Europeans and natives in this place is taken from a Jhora (hill stream) coming down from Dow Hill, which is exposed to much contamination almost from its source, viz., from jungle to which the natives resort for defæcation, and from pigstyes and stables. The Garidhura and the Longview tea estates were specially affected. In the former 86 deaths occurred, and in the latter 69. In Garidhura large hâts are held, its sanitary condition is bad, and it lies very low on the banks of the river. Dr. Joubert further observes that in no case did he notice a tendency of the disease to spread to other persons than those living under the peculiar conditions which seemed favourable to the development of cholera during this year in which it exercised an epidemic influence, although these insanitary conditions were not peculiar to this particular year, the people among whom the cases occurred having lived for years past when no cholera occurred, and will no doubt live

in the same way till cholera again visits the hills. But he asserts that the disease, in whatever form it travels in years of epidemic occurrence, finds a favourable spot for its full development in such places, and sporadic cases occur during the prevalence of an epidemic influence. In support of this view of the question the Deputy Commissioner quotes the cases of two tea gardens, the Tirihana in the Terai and Longview at an elevation of about 1,200 to 2,000 feet. The former is always attacked by cholera, and the latter suffered during the year under notice and when the disease was last epidemic in the hills.

56. *Julpaiguri.*—This district also suffered very severely. It is the second on the list of districts in which cholera prevailed with the greatest virulence. The diseaso overran 19·87 per cent. of the villages against only ·72 in 1882, and the mortality stood at 2,430, or 4·17 per 1,000 of population against 33, or ·05 per 1,000. May to September were the unhealthiest months, and the arears which suffered the most are those named in the margin.

	Ratio per *mille.*		Ratio per *mille.*
Salbari thanah ...	21·29	Mynaguri thanah ...	4·60
Julpaiguri town ...	12·07	Patgram „ ...	3·58
Alipur thanah ...	11·65	Kairanti „ ...	2·95

Nothing particularly worthy of record was reported regarding the severe prevalence of the disease in this district, excepting that it set in with virulence with the May rains, which fell during 20 days in that month as compared with 11 days in the corresponding month of the previous year; that thanah Boda, which enjoyed immunity during the months when the disease was severely afflicting the district, was attacked in September, when it had abated considerably; that a virulent type broke out in the Nyabasti village close to the Railway station, and in some of the tea plantations in the Duars; and that the disease is generally believed to have travelled viâ Cooch Behar.

57. *Dacca.*—In this district the incidence of cholera had abated very considerably. It affected only 10 per cent of the villages against 19 in 1882, and the deaths fell off from 6,334, or 2·99 per 1,000 to 2,197, or 1·03 per 1,000. As usual the worst months were January, March and April. Only the Keranigunge thanah and the Naraingunge town suffered with anything like conspicuous severity, the death-rates returned by them being 2·74 and 2·22 per 1,000 of population, respectively. Referring to the theory of cholera epidemics being influenced by human intercourse, Dr. Crombie quotes the following cases as disproving it. A severe outbreak of the disease occurred in Keranigunge on the opposite side of the river from Dacca. At this outbreak it was observed that, although there is the freest communication between this place and the Dacca town, ferry boats, conveying clerks and others, constantly plying between the two places, Dacca was comparatively freer from the disease. Similarly, while rather serious outbreaks occurred in Raipura and Rupgunge, which lie on either side of the river Lakhya, and between which and Naraingunge, the great jute centre of Eastern Bengal, situated at the mouth of that river, there is a constant river traffic, only 29 cases took place in Naraingunge thanah: but the town of that name suffered rather severely.

58. *Faridpore.*—In this district also the suffering was considerably less severe than in the preceding year. Two thousand and seventy-nine deaths, or at 1·27 per 1,000 of population were recorded in 12 per cent. of the villages, against 5,038 deaths, or at 3·08 per 1,000 in 21 per cent. of the villages. The seasonal incidence of the disease was the same as at Dacca, and the areas of highest mortality were the thanahs of Madaripore, Goalundo, Kotalipara and Gopalgunge, and the town of Faridpore, in which the death-rates amounted to 2·71, 2·46, 2·02, 1·92, and 2·04 per 1,000 of population, respectively. Referring to the great immunity from the disease which the district enjoyed during the year under review as compared with the preceding year when hundreds of villages had been attacked, the Civil Surgeon observes "if there is a specific cholera germ, the germ of the disease had been [in 1882] sown broadcast in those villages by the burial of the deceased within the compound of the houses and near tanks and other reservoirs of water, by keeping the soiled clothes of the deceased, or washing them in tanks and other reservoirs, by throwing the ejections of the deceased all over the place, and by allowing

the house and its furniture to remain infected. Here we have the locality and the germ of the disease, and yet it did not crop up" [in 1883].

59. In *Backergunge* 26 per cent. of the villages were attacked, and the deaths and death-rate amounted, respectively, to 4,566 and 2·40 per 1,000 of population, the corresponding figures of the preceding year being, villages affected 31 per cent, deaths 8,570, and death-rate 4·50 per 1,000, indicating a great reduction of sickness and mortality. The months in which the largest mortality was returned were January, February to April, and November and December; and the marginally noted areas experienced the highest suffering. It was remarked that in this district the period during which the disease exhibits greatest activity corresponds with the period during which the least rain falls. It is during this time that the water in the tanks from which the drinking supply is preferably taken, becomes, by evaporation, foul, or little better than diluted sewage.

	Ratio per *mille.*		Ratio per *mille.*
Bhandaria thanah ...	6·23	Barisal town	2·88
Matbari „ ...	4·83	Surupkati thanah ...	2·63
Patuakhalli „ ...	3·45	Backergunge „ ...	2·46
Gulsakhalli „ ...	3·18	Barisal „ ...	2·27
Nalchitti „ ...	3·11	Gaurnaddi „ ...	1·95
Jhalokati „ ...	3·08		

60. *Mymensing.*—In this district the disease prevailed with diminished severity. The percentage of villages attacked amounted to 9 against 6 in 1882; the deaths to 3,848 against 5,998; and proportion of deaths to population to 1·26 against 1·96 per 1,000. January to June were the worst months, and thanah Netrakona and Kishorgunge town returned the highest death-rates, viz., 3·74 and 2·86 per 1,000 of population, respectively. No information, possessing any special interest, was submitted for this district, except that the absence of the disease in its severe form in the winter was unusual and remarkable.

61. *Chittagong* and *Noakhalli.*—There was very little cholera in these districts, and the mortality was low. Contrasted with 1882 much diminution is seen, notably in Chittagong. The table given in the margin illustrates these facts. In Chittagong March was an unhealthy month, but in Noakhalli no month claimed this pre-eminence, the disease having prevailed in it in a sporadic and scattered form.

	Deaths.		Ratio per *mille.*		Percentages of villages attacked by the disease.	
	1883.	1882.	1883.	1882.	1883.	1882.
Chittagong ...	830	2,714	·29	2·40	5	21
Noakhalli ...	90	268	·10	·32	2	6

62. In the *Tipperah* district the disease prevailed with somewhat lesser severity than in the preceding year. The percentage of villages affected was 8 against 10; the deaths numbered 2,431 against 2,665; and the casualty-rate amounted to 1·60 against 1·75 per 1,000. The severity of the disease was confined to the first five months of the year, for in June it abated suddenly and sensibly, and continued at a low ebb throughout the remainder of the year. This is said to be contrary to past experience, for in this district while the disease is always present in some part of it throughout the year, it sinks into endemic insignificance during the hot season and rains, and rises to epidemic activity during the cold season. In the areas noted in margin the disease proved most fatal.

	Ratio per *mille.*		Ratio per *mille.*
Brahmonberia town ...	5·64	Daudkandi thanah ...	2·51
Lakaham thanah ...	4·38	Brahmonberia „ ...	2·16

BEHAR.

63. In this division of the Province the prevalence and fatality of cholera was greater than in Chota Nagpore, but lesser than in Bengal and Orissa. The mortality is represented by 27,568 deaths, or at the rate of 1·19 per 1,000 among a population numbering 23,127,104, against 70,448 deaths, or at 3·04 per 1,000 in the preceding year. May to August were the unhealthiest months.

Cholera in the Behar division of the Province.

64. *Patna.*—In this district the disease exhibited considerably abated virulence in comparison with the preceding year. Nine per cent. of the villages were

affected against 18 per cent.; 2,252 persons died against 5,078; and the death-rate was represented by 1·28 per 1,000 of population against 2·89 per 1,000. The months of greatest suffering were April to August; and in the circles named in the margin the highest mortality occurred.

	Ratio per mille.		Ratio per mille.
Dinapore thanah ...	5·07	Bikram thanah ...	2·44
Patna town ...	3·35	Patna „ ...	2·05
Behar „ ...	3·04		

A smart outbreak of the disease occurred in Umbair in the Behar town, and lasted about a month. Here tank water is used, which is said to be stagnant and foul throughout the year. An outbreak in Mokameh town was attributed to importation by Railway passengers. In the Dinapore Cantonment and the Nizamut chowkidari unions, as well as in several surrounding villages, the disease broke out epidemically. The troops were moved out of the cantonments. Its epidemic prevalence was also felt in the Patna and Futuha towns, and in the Patna and Mokameh rural circles; but the malady does not appear to have proved conspicuously fatal in Futuha and Mokameh.

65. The *Gya* district holds the third position on the list of cholera-stricken districts. The disease prevailed in it very extensively and fatally, and to a much greater extent than in the preceding year. Nine per cent. of the villages against 5 per cent. was overrun by the disease, and the deaths amounted to 7,937, or at the rate of 3·73 per 1,000 of population against 4,995, or 2·35 per 1,000. The circles which presented the highest death-rates are those named in the margin. It exhibited epidemic intensity during April to September almost throughout the district, after which it abated gradually. It broke out simultaneously in very many villages far distant from each other; and exercised unusual virulence in the Aurangabad and Sudder sub-divisions, specially in the former, where the disease took its rise; and in the Jehanabad and Nawada sub-divisions, but to a lesser extent, thanahs Nawada, Pakribrawan, and Rajauli in the latter sub-division escaping this influence.

	Ratio per mille.		Ratio per mille.
Daudnagar town ...	23·20	Tikari thanah ...	5·31
Ditto thanah	10·65	Sherghatti „ ...	4·53
Gya town	8·85	Arwal „ ...	4·29
Aurangabad thanah	7·22	Gya „ ...	3·67
Nobingar „ ...	5·49	Barachati „ ...	2·08

The Civil Surgeon visited many of the affected localities, but could obtain nothing beyond negative evidence as to the causation of the disease. In no instance, however, was it be traced to importation. It appeared to him that the disease spread irrespective of lines of traffic, and that the prevailing winds did not influence its course; but that rather while during the earlier part of the outbreak the prevailing wind was west, the progress of the epidemic was from east to west. Mr. Skrine, the Magistrate, is inclined to believe that the progress and virulence of the disease was fostered by the filthy habits and overcrowding of the population. The Rajah of Deo distributed medicines gratis, and Babus Sham Lall Mitter and Nundo Lall Bose, zemindars, engaged a medical practitioner and provided medicines for the relief of their tenants.

66. In *Shahabad*, as in Gya, the disease exercised an extensive epidemic sway, and proved very fatal to life. It attacked 12 per cent. of the villages and killed 6,379 people, or at the rate of 3·24 per 1,000—the highest mortality on record since 1876. The figures of 1882 were, percentage of villages attacked 8, deaths 3,617, death-rate 1·85 per 1,000. The areas which suffered most severely are indicated in the margin.

	Ratio per mille.		Ratio per mille.
Karghar or Nokha thanah	6·18	Mohania thanah ...	3·49
Buxar town ...	6·16	Domraon „ ...	3·47
Piru thanah ...	4·96	Domraon town ...	3·36
Buxar „ ...	4·76	Dhangain thanah ...	3·21
Bhabua „ ...	4·27	Belauti „ ...	2·14

The district was practically free from the scourge during the first quarter of the year; but during the hot weather and rains, from May to September, it prevailed epidemically. In April it was reported to be present, with some severity, in the Piru thanah in the south of the district. Early in May it attacked the village of Berahpore in thanah Domraon in the north, in which and its neighbourhood a crowded fair was being held. The first case occurred among the permanent residents of the village, and from them this disease spread to the assemblage at the fair. Those who camped out of the fair did not suffer. The fair was broken up, and the people dispersed, carrying, according to the Civil Surgeon, their sick with

them, notwithstanding that a hospital had been established at the fair and a native doctor with medicines provided. By the end of May the disease had spread to every thanah in the district. In June it was at its height. During July its severity was also great; but from August it declined. The Magistrate doubts if, as above stated, any of the sick were carried away, and he thinks it would be a mistake to infer that the origin of the outbreak is referable to the fair. The Civil Surgeon has very little doubt that the mortality at this outbreak had been understated, and he believes that only three-fourths of the actual number of casualties were recorded.

67. *Mozufferpore.*—In this district the prevalence and fatality of cholera had diminished very considerably in comparison with its incidence in the preceding year, when it was epidemic over a large area of the country. In 1883 it was present in 6 per cent. of the villages against 22 per cent. in 1882; the casualties amounted to 3,427 against 12,109, and the proportion of deaths to population was 1·32 per 1,000 against 4·68. The mortality was highest during the months from May to October, and only the five circles named in the margin suffered with any approach to noticeable severity. The sanitary reports of the district do not contain any information worthy of record.

	Ratio per mille.		Ratio per mille.
Hajipore town ...	3·85	Pupri thanah ...	2·19
Mozufferpore " ...	3·83	Lalgunge town ...	2·02
Sitamarhi thanah ...	2·80		

68. *Durbhanga.*—This district also enjoyed, on the whole, marked immunity from the disease. The percentage of villages affected by it was 4 against 23 in 1882, the deaths numbered 2,779, or at 1·05 per 1,000 of population against 10,916, or at 4·14 per 1,000. The only areas that presented high mortality were the Benipati rural circle and the Durbhanga town, where the death-rates amounted to 4·26 and 2·57 per 1,000 of population, respectively. The malady prevailed very badly in Harlaki and Deodha on the borders of Nepaul, whence it travelled a distance of about 20 miles. This outbreak is said to have been introduced from a fair at Janakpore in Nepaul, five miles from the frontier, where 50,000 pilgrims assemble every year, and where no preventive or sanitary measures are even thought of by the Nepal authorities. A remarkable feature presented by the disease this year was that, while it was conspicuous by its absence from the beginning of the year up to April, in the latter end of that month it broke out only in thanah Nagurbusti, and spread during the next month *all over the district* (not a single thanah escaping); reached maximum severity in the early part of June; and rapidly abated after a heavy (9·1 inches) fall of rain on the 17th of that month, and continued declining up to September, after which it entirely disappeared. The rainfall during June, July, August and September was 15·86, 10·07, 11·18, and 3·42 inches, respectively. The Civil Surgeon, Dr. Gilligan, notes that the record for years and long observation indicate a prevalence of the disease when the weather becomes dry and hot, its advent dating in April, and that during the prevalence of such weather it goes on increasing in virulence, and is only arrested at the setting in of the rains. He exhibited commendable forethought, energy, and care in advising and adopting measures for the suppression of the disease in the town of Durbhanga, where it prevailed severely. In this he was greatly assisted by the local authorities.

69. *Sarun* and *Chumpurun.*—In both these districts the disease prevailed with remarkably abated severity in comparison with its incidence in 1882, particularly in the latter, as the marginally noted figures show. The months of maximum intensity of the disease were May and June in Sarun and September in Chumparun, but no circle in either district exhibited noticeably high death-rates.

	Deaths.		Ratio per mille.		Percentage of villages attacked.	
	1883.	1882.	1883.	1882.	1883.	1882.
Sarun	1,114	3,534	·48	1·54	4	10
Chumparun ..	529	5,362	·30	3·11	1	6

70. *Monghyr*, *Bhagulpore*, *Purneah*, *Maldah* and *Sonthal Pergunnahs.*—The phases exhibited by the disease in these districts during 1883, in comparison with those which obtained in the preceding year, may be considered together, as they are identical, the differences being few. The mortality in all these districts had diminished, pre-eminently in Bhagulpore and

Purneah, and the areas covered by the disease, as represented by the percentages of villages attacked, presented the same feature, except that in Maldah and Monghyr a larger proportion of the villages were affected. These observations will be found illustrated by the table in the margin. In seasonal incidence only Maldah and Purneah exhibited periodical exacerbations, the former during the months of January, April and May, and the latter in June and August. In point of fatality a few of the circles in these districts furnished high death-rates. These are named in the margin. The leading features connected with the aspect of the disease presented by some of the districts are subjoined. In *Monghyr* it was noticed that nearly a third of the total casualties (278 out of 875) occurred in the towns of Monghyr and Jamalpore. The Civil Surgeon of *Maldah* writes:—"The April outbreak of cholera coincided more or less with the first onset of the rains in that month, the weather at the same time being cloudy and hot (102°F.), and the prevailing wind easterly. In such a case after a spell of dry, hot weather of six weeks' duration, the first showers would of course start decay into activity, and thus aid the propagation of disease." In the *Sonthal Pergunnahs* the disease broke out in April and, as usual, suddenly in several villages separated by long distances, without spreading from one village to another; and was most fatal in this month. There was a decline in May, which continued till September, but in October and November the severity of the disease was again felt, December showing but a few cases. Of the local outbreaks, the following may claim attention. In the sub-division of Deoghur, excluding several small outbreaks, the noticeable one is that which occurred in June in village Goradi, six miles south of Madhupore thanah, which gradually extended to several neighbouring villages, and in which 154 persons were attacked and 141 died. The town of Rajmehal suffered severely, particularly in April, when the disease lasted six weeks and was attended with 30 cases and 23 casualties, and again in November, when it lasted three weeks, attacked 73 persons and killed 38. Excluding sporadic cases, two severe outbreaks occurred in the town of Sahebgunge, one in May attended with 31 cases and 27 deaths, and the second in October, in which 50 persons were attacked and 25 died. With regard to these outbreaks, it is stated that much traffic goes on at this station and many people, such as coolies, Sonthals, Pahariahs, as well as villagers, from Purneah and Maldah, frequent the municipal market; and that, although the water-supply is good and the conservancy fairly attended to, the cattle sheds and private privies are "badly kept." The inference suggested is that under these circumstances cholera may easily be propagated.

	Deaths.		Ratio per *mille*.		Percentage of villages attacked.	
	1883.	1882.	1883.	1882.	1883.	1883.
Monghyr	875	5,351	·44	2·71	3	2
Bhagulpore ...	508	7,719	·25	3·92	2	2
Purneah	350	8,870	·18	4·79	1	12
Maldah	1,048	1,088	1·47	1 53	8	7
Sonthal Pergunnahs.	369	1,779	·23	1·13	1	3

In Monghyr.	Ratio per *mille*.	*In Maldah.*	Ratio per *mille*.
Jamalpore town ...	5·89	Ratna thanah ...	3·43
Monghyr " ...	3·44	Nawabgunge " ...	2·91
In Bhagulpore.		Kharba " ...	2·18
Bhagulpore town ...	2·90	Maldah " ...	1·96

ORISSA.

71. In Orissa cholera prevailed with the greatest severity as compared with its incidence in the other three divisions of the Province (Bengal, Behar and Chota Nagpore). The casualties amounted to 6,631, representing a death-rate of 1·82 per 1,000 among its population of 3,628,832, as opposed to 16,956 deaths, or at 4·74 per 1,000 in 1882. In seasonal fatality every month, excepting November and December, returned a high death-rate.

Cholera in the Orissa division of the Province.

72. *Cuttack.*—This district, in which cholera prevailed most extensively and fatally in 1882, enjoyed comparative immunity this year. The percentage of villages attacked was 7 against 13, and the mortality reached 3,502 of the population, or at 1·95 per 1,000 against 7,296, or 4·19 per 1,000. In 1882 every circle in the district, 12 in number, returned noticeably high death-rates;

this year only the six named in the margin suffered similarly, although pilgrims, as usual, passed through the district during the principal festivals. It was observed that the greatest mortality occurred among them in January and February, and again in June and July at the time that the Dole Jatra festival is held; that the thanahs from which the highest number of casualties were returned, viz., Aul, Patamundi, and Kendrapara, excepting Salipore—which did not suffer very conspicuously this year—constitute the roads taken by the pilgrims from Chandballi to Cuttack; that Tirtol, which is not situated on the pilgrim route, exhibited a lower death-rate; that the local pilgrims who attend the abovementioned festival often disseminate the disease in their villages; and that the spread of the disease in the villages is due not only to the insanitary conditions that obtain in them, but also to the contamination of the water-supply by the washing in it of excreta, soiled clothes and bedding of the cholera-stricken, which the people in their ignorance, carry to the nearest tank. The passing of pilgrims through the Cuttack town in their way to Poori was, it is stated, stopped this year, by providing for them a road at a distance of two miles from the limits of the town. The reduction of the death-rate from cholera in this town from 4·55 per 1,000 of population in 1882 to 1·41 per 1,000 during the year under review is attributed to this measure.

	Ratio per mille.		Ratio per mille.
Aul thanah ...	6·00	Jaipur town ...	3·47
Patamundi „ ...	4·53	Tirtol thanah ...	2·32
Kendrapara „ ...	3·54	Salipore „ ...	1·94

73. The *Poori* district also suffered at a considerably lower rate this year. The total casualties amounted to 1,122, or at 1·26 per 1,000 of the population against 3,783, or 4·25 per 1,000. The percentage of villages affected by the disease was 6 against 13. Only the Poori town, forming the centre of the pilgrim gathering, which generally heads the list of localities of high suffering, returned a noticeably high death-rate, viz., 6·95 per 1,000 of population. The behaviour of cholera in 1883 was much the same as in former years, viz., that it exhibited greater activity and fatality at three different periods of the year more or less coincident with the three great religious festivals held in the town of Poori than during the intervening periods.

74. *Balasore.*—Here also the prevalence and fatality of the disease had diminished to a very great extent as compared with its incidence in 1882, but the mortality was higher than in the two other districts in Orissa. The percentage of villages pervaded by the disease was 12 against 25 and 2,007 persons, or at 2·12 per 1,000 were carried off by it against 5,877, or at 6·21 per 1,000. In seasonal fatality January to July and December exhibited greater suffering than the rest of the months, and the areas mentioned in the margin furnished the highest death-rates. No information possessing any special interest was found in the sanitary reports submitted, except that the Magistrate says that, cholera broke out among the coolies working on the Coast canal, resulting in 20 casualties.

	Ratio per mille.		Ratio per mille.
Basta thanah ..	4·20	Balasore town ...	2·66
Baliapal „ ...	4·11	Dhamnagore thanah	2·31
Jellasore „ ...	3·24		

CHOTA NAGPORE.

Cholera in the Chota Nagpore division of the Province.

75. This division of the Province enjoyed, as it also did in the preceding year, great immunity from the disease. The casualties numbered 1,605, yielding a death-rate of only ·37 per 1,000 of its population enumerated at 4,334,178. The mortality in the preceding year was the same, viz., 1,642 deaths, or at ·37 per 1,000. The death-rates were low during every month of the year, excepting July and August, which exhibited a small exacerbation.

76. *Hazaribagh.*—Cholera prevailed in this district more fatally than in any year since 1879, but the general death-rate in the year under review was insignificant. 1·27 per cent. of the villages were visited by it against 13 per cent. in 1882, and 723 deaths, or at ·65 per 1,000 of population were recorded against 153, or ·13 per 1,000. The months of greatest suffering were June to August. The disease followed its usual course. It appeared in the hot weather in April in the lower levels of the district, and although isolated cases also occurred in the higher levels during this period, it did not

assume serious proportions until the rains commenced in the middle of July. It prevailed epidemically in only the Hazaribagh town, where 3·20 per 1,000 of the population was carried off. Of noticeable local outbreaks, the following are cited by the Civil Surgeon, Dr. Cobb, the facts connected with which came under his personal observation. At an outbreak in the Hazaribagh town the disease was located in a street in the bazar at the end of which was a large tank. The first case occurred in a man who had come from Bagodar on the Grand Trunk road, and who died in this street the day following his arrival after he had washed himself in this tank. A few days after this other cases occurred, but after the Police had been placed around the tank no other cases occurred for three weeks. In another severe outbreak of the disease in another part of the town the burning of sulphur fires in the affected locality, as recommended by Dr. Tuson, appeared to have had some effect in checking the disease, as it was followed by a marked diminution in the number of cases reported.

77. In the *Lohardugga* district there was also an accession of the disease, the deaths numbering 536 against 109 in 1882, and the death-rate amounting to ·33 per 1,000 of population against ·06 per 1,000. It prevailed extensively in the rainy season during the months of July to August, and was confined to the Palamow sub-division, where only the Hosseinabad thanah suffered severely, presenting a death-rate of 4·19 per 1,000 of population. In no other circle in the district was the death-rate noticeably high. The cholera in Hosseinabad, as well as in Garwah, is believed by the Deputy Commissioner to have been imported from Gya, where it was prevailing to a considerable extent.

78. *Singbhum* and *Manbhum*.—In these districts cholera prevailed at a low rate, and as compared with its incidence in 1882, with lesser severity. The marginal figures indicate the sickness and mortality that were presented by them. While the disease was not severe in any month in Singbhum, it exhibited a small exacerbation in April in Manbhum. No area in either of these districts suffered with exceptional severity. In *Manbhum* the only noticeable outbreak of the disease was that which occurred among a party of jattrawallahs (actors) *en route* to Bankura. One of their number died in the dispensary at Purulia, but the rest escaped the disease. Two cases of cholera also occurred in the cooly depôts.

	Deaths.		Ratio per *mille*.		Number of villages attacked.	
	1883.	1882.	1883.	1882.	1883.	1882.
Singbhum ...	34	65	·06	·11	10	22
Manbhum ...	312	1,315	·29	1·24	81	291

79. **Port of Calcutta.**—In the Port of Calcutta 37 deaths occurred among the *European seamen* out of 65 admissions into hospital, being in the proportion of 19·89 per 1,000 of population of the year as estimated by the Health Officer. In addition there was one death out of hospital. This mortality was lower than that which occurred in 1882 and 1881, but double that of 1880, as the death-rates in these years amounted to 22·87, 24·44, and 10 per 1,000 of population, respectively. Of the 65 who were attacked by the disease, 38 were ascertained to be new arrivals in Port of less than a month, and of the 37 casualties, 23 were found to have occurred in persons who had been indulging in drink on shore. In seasonal fatality the unhealthiest months in Port were precisely the same as in the town, viz., March, April and May; for while out of 1,911 deaths in town 1,036, occurred in these months, 19 out of the 38 casualties in Port took place in the same months.

Cholera among European Seamen.

80. Cholera was the chief cause of death among the *native floating population* in this as in the preceding year, and the mortality in both years was nearly identical, the deaths amounting to 116, or at 4·56 per 1,000 of population in 1883, as opposed to 115, or at 4·52 per 1,000 in 1882.

Cholera among the Native Floating Population

81. The Health Officer submits the subjoined figures as illustrating the lesser liability to cholera of the native river population drinking unfiltered water as compared with that of the town population using filtered water. The town figures have been taken from the reports of the Health Officer of the town, and from the Port

Comparative influence of filtered and unfiltered water on cholera.

figures the deaths and average strength of the European seamen, who drink filtered water, have been deducted:—

	Ratio per *mille*. 1883.	1882.	1881.
Town	4·7	5·2	3·9
Port	4·40	4·35	2·60

82. I hope I may be pardoned for entering into so much detail of cholera prevalence in the Province, but it is important that a concise record of the disease, district by district, should be annually prepared for ready reference by the Government and Sanitary and Medical officers. The several divisions also differ so widely in climatic and physical features, that observations on them must be given separately to be of any value.

Why the Cholera history of the year should be furnished in some detail.

SMALL-POX.

83. The recorded deaths from small-pox amounted, during the year under review, to 9,714, or at the rate of ·14 per 1,000 of population; and it is gratifying to observe from the marginal table that this mortality was lower than that of any year of the preceding decade, excepting 1875 and 1877. The incidence of the disease was marked during the year under notice with more or less severity in 30 circles against 33 in 1882, and it was absent from 284 against 280, and affected 1·73 per cent. of the villages against 2·33 per cent. The contributions to the mortality of the year by the urban and rural circles are marginally indicated.

Year.	Number of deaths.	Ratio per *mille*	Year.	Number of deaths.	Ratio per *mille*.
1883 ...	9,714	·14	1877 ...	8 088	·12
			1878 ...	12,410	·18
1873 ...	10,933	·16	1879 ...	22.843	·34
1874 ..	12,056	·18	1880 ...	22,953	·34
1875 ...	5.280	·07	1881 ...	24,371	·36
1876 ...	10.746	·16	1882 ...	13,651	·20

	Deaths. 1883.	1882.	Ratio per *mille*. 1883.	1882.
Urban circles. .	672	853	·27	·34
Rural ,, ...	9,042	12,798	·14	·20

84. While no district, considered as a whole, exhibited any general epidemic prevalence of the disease, its severity was noticeably great in the under-mentioned towns and rural areas.

Localities of severe prevalence of Small-pox.

TOWNS.

	Ratio per *mille*.		Ratio per *mille*.
Chaibassa	5·16	Jaipur	2·40
Deoghur	2·74	Gya	2·24
Darjiling	2·63	Sewan	1·87

RURAL CIRCLES.

Bhaupur, in Poori	9·75	Dharmsala, in Cuttack ...	1·23
Sandip, in Noakhalli	3·29	Gulsakhali, in Backergunge ...	1·19
Aul, in Cuttack	2·68	Salipore, in Cuttack	1·15
Gulachipa, in Backergunge ...	1·86	Chandina, in Tipperah... ...	1·05
Dhamnagur, in Balasore ...	1·80	Daulatbazar, in Murshidabad ...	1·01
Laksham, in Tipperah ..	1·60	Ketugram, in Burdwan ...	1·00
Kurseong, in Darjiling ...	1·33	Jelinghi in Murshidabad ...	·93
Shujagunge, in Murshidabad .	1·31	Netrakona, in Mymensing ...	·92
Patamundi, in Cuttack .	1·31	Behar, in Patna	·90
Goas, in Murshidabad... ...	1·23		

85. It is again seen, *vide* marginal figures, that small pox was specially prevalent during the hot months of March to June, as 55 per cent. of the total mortality in 1883 and 57 per cent. in the quinquennium 1878-82 occurred in these months.

Seasonal fatality of Small-pox.

Months.	Deaths in 1883.	Average deaths in 1878-82.	Months.	Deaths in 1883.	Average deaths in 1878-82.
March ...	1,560	3,089	July ...	729	1,280
April ..	1,478	3,189	December ...	493	900
May ...	1,348	2,757	August ...	454	816
February ...	1,280	2,113	September ...	243	589
June ...	906	2,014	November ...	218	548
January ...	844	1,455	October ...	161	496

86. The figures given in the margin, illustrating the mortality among infants and children, again indicate that the largest number of casualties from small-pox occurred among them, as no less than 71·04 per cent. of the total mortality from the disease was contributed by them. In comparison with 1882 a much higher percentage of infants and children perished from this cause during the year under review. The death-rate among male children was, as usual, in excess of that among females.

Mortality among Infants and Children from Small-pox.

	Deaths.		Proportion per cent. to total mortality.		Proportion per cent. of male to female deaths.	
	1883.	1882.	1883.	1882.	1883.	1882.
Under 1 year	1,883	2,999	19·59	21·96	107	111
1 to 12 years	5,018	6,130	51·76	44·91	114	109
Total under 12 years	6,901	9,129	71·04	66·87	112	110

Chief particulars relative to the prevalence of Small-pox in particular districts.

87. The information under this head is subjoined.

88. In *Burdwan*, the largest number of casualties from small-pox, 74, out of 108 the total mortality, was reported from thanah Ketugram, notwithstanding that the whole of this district was in the previous year pronounced by the Superintendent of Vaccination, Metropolitan Circles, to have been thoroughly protected. The *Midnapore* district was remarkably free from the disease this year, and the mortality was lower than during several past years. Sabang returned the largest number of deaths, but this thanah is one of those in which the people are opposed to vaccination. The great freedom from the disease of the *Khulna* district is attributed to thoroughness of protection by past vaccination. In *Murshidabad* there was a large increase in the prevalence of the disease, the deaths numbering 335 against 94 in 1882, and a good many of the casualties occurred in those who had been attacked towards the close of 1882. This district has also the reputation of having been thoroughly protected. 628 persons, 137 fatally, were attacked by small-pox in certain villages in thanah Goas. These villages are chiefly inhabited by Ferazees, who stoutly resist vaccination on religious grounds. Thanah Jelinghi also suffered severely, the deaths numbering 101. In *Darjiling* small-pox appears to have been confined in the hill portion, the Terai and the plains being almost free from it. In this district, which is wedged in between Nepaul, Sikkhim and Bhootan where the population is unprotected, and where inoculation is resorted to for protection, the disease is frequently traced to importation by travellers, traders, coolies, and others from beyond the frontier. *Bogra* was the only district in the Province which enjoyed complete immunity from the disease; in *Rungpore* only one death was recorded, and in *Jessore* and *Dinagepore* three each. At *Noakholli* the disease is an annual visitant, and is believed to be due to inoculation which is generally practised. It prevailed to an unusual extent in Sundip during January to April. Vaccinators from the Eastern Bengal Vaccination Circle were deputed to stamp out the disease. Dr. O'Brien, the Civil Surgeon of *Shahabad*, states that small-pox is propagated in his district every year by inoculators. At the time of writing his report, a child was brought to him covered with confluent small-pox after inoculation. He thinks that the inoculators to whom licenses to practise vaccination are issued by him every year, being without supervision, use the licenses as covers to carry on their original practice of inoculation. This will always be the case so long as ex-inoculators are allowed to carry on operations unsupervised. A very smart outbreak of the disease occurred in the *Durbhanga* Municipality, and the necessary steps were adopted to stamp it out. It prevailed with the greatest severity in May and June, resulting in 42 deaths, or at ·63 per 1,000 of population. *Chumparun.*—The disease prevailed in a serious epidemic form almost throughout this district from May to September, the Motihari sub-division suffering to a greater extent than Bettiah the other sub-division. On the whole 2,308 persons were reported to have been attacked, of whom 657 (according to the mortuary returns) died, being in the proportion of ·38 per 1,000 of population. The local reports, which are presumably more correct, give 868 deaths. *Monghyr*, *Bhagulpore* and *Sonthal Pergunnahs.*—The disease was very widespread in these districts, but the mortality does not, according to the returns, appear to have been great, the deaths recorded amounting to 266, 197, and 80 respectively. The casualties in Monghyr, of which the mortuary statistics are very imperfect,

and in Bhagulpore, were considerably smaller than in 1882, but in the Sonthal Pergunnahs they were somewhat larger. Almost the whole of the Sonthal Pergunnahs and Bhagulpore districts are reported to have been thoroughly vaccinated. The sanitary reports from Monghyr and Bhagulpore contain no account of the outbreaks which occurred in them, but the Superintendent of Vaccination, Sonthal Pergunnahs Circle, notes that at Bhagulpore some children were found to have been inoculated, that at Serainpore in this district the people refused vaccination, and that it was found difficult to vaccinate Banka and Amarpur, as the affected villages in them are far apart from each other, and the people much opposed to vaccination. In the Sonthal Pergunnahs district there occurred several local outbreaks confined to limited areas, the chief of them being the following:—In June a sharp outbreak occurred in the Shariahat Bazar, 20 miles north-west of the Dumka town, where 20 were attacked and 3 died. In the town of Deoghur the disease prevailed with very great severity, continued throughout the year, and passed on to the current year. It first broke out in February in the person of a man who resided in a village near the town and had brought the disease from Patna. From this locality it spread gradually to the bazar and other parts of the town. Every effort was made to vaccinate the unprotected, and, although the natives of the place submitted to the operation, these endeavours were rendered abortive owing to some up-country families having strongly opposed and steadily refused the prophylactic. The Compulsory Vaccination Act has since been introduced into this town. In Jogia and some adjoining villages, 8 miles north-east of Deoghur, 67 cases attended with 27 deaths occurred in March. Another sharp outbreak occurred in the same month in Maharawa and some neighbouring villages 12 miles south of the outpost of Motaganiah in the sub-division of Godda affecting 89 persons and causing 19 deaths. There was an outbreak in April chiefly confined to the villages near Sahebgunge in the sub-division of Godda, where 74 cases occurred attended with only six deaths. This outbreak was traced to importation from Deoghur where the disease was prevailing, having been brought by a villager on his return from a visit to the shrine of Badyanath. An outbreak at Rakti near Sarwan in Deoghur was originated by a lad who had been inoculated 10 years ago. The disease is still (June 1884) prevailing in the abovementioned three districts with marked severity, and the whole of the permanent vaccination establishment of the circle is engaged in suppressing it. Although there was, on the whole, a reduction in the prevalence and fatality of small-pox in the *Poori* district, it prevailed severely, to a more or less extent, in thanah Bhanpur during the whole year, as it did in 1882, July and August being the worst months. It first appeared in the village of Ranipara, and spread gradually to the whole thanah. It was not confined to any particular locality, isolated cases occurring everywhere. Active steps were taken to stamp out the disease by vaccination. It is noticeable that the town of Poori enjoyed entire immunity from the disease. In *Hazaribagh*, the disease prevailed with greater severity than in the preceding year, the mean death-rate being ·15 per 1,000 against ·10 per 1,000. A virulent and very fatal outbreak occurred in Bishengarh. It appears to have commenced in March 1882 and to have lasted up to June 1883, but no information of its existence was sent to the Vaccination Department until February 1883. There was some delay in sending a vaccinator to the locality, as the one who was directed to proceed to it did not obey the order. Another vaccinator was, however, sent in May, but he could not carry on his work for a time owing to opposition by the higher classes whose example was followed by the lower. On this being reported to the Superintendent of Vaccination, he proceeded to the locality, and with great difficulty vaccinated 55 of the children. After this the opposition broke down in a great measure, but 20 of the children could not be operated on, as no explanations, persuasions, &c., could induce their parents to bring them out of their houses for the purpose. In *Singbhum* the disease prevailed very fatally, the reported number of cases being 278 and the deaths 212, as opposed to 192 cases and 166 deaths in the preceding year. In the town of Chyebassa it prevailed epidemically. It broke out in May of 1882 and passed on to the year under review. But the mortality from the disease, which was highest in January, ceased in March. In *Manbhum* the disease prevailed epidemically only

in the Topchanchi thanah during the latter half of the year. There occurred 125 cases attended with 18 casualties. It was traced to pilgrims *en route* to Poori.

89. *Port of Calcutta.*—In the Port of Calcutta small-pox, while it was absent from among the European seamen during the two preceding years, attacked five of their number during the year under review, but not fatally. Of the native floating population nine, as far as could be ascertained, had the disease, and two died, against 7 attacks and no deaths in 1882. On a steamer which arrived in Port with return pilgrims from Jeddah, there were found three cases of small-pox among its 584 passengers. The sick were sent to hospital, and the vessel detained at Garden Reach until she was cleaned and disinfected.

FEVER.

90. Fever, which causes a far higher mortality in the Province than any other disease, prevailed with diminished severity during the year under review as compared with its immediate predecessor and also with 1881, but with markedly enhanced fatality in comparison with its incidence during all the years since 1871 for which records of any reliability are available. The number of deaths amounted to 913,766 and the death-rate to 13·81 per 1,000 of the population under registration, as opposed to 929,943 deaths, or at 14·06 per 1,000, in 1882, thus showing a reduction in deaths of 16,177 and in the casualty-rate to population of ·25 per 1,000. The disease pervaded 57 per cent. of the villages in the Province, against 51 per cent. in 1882, and exhibited great virulence in 27 circles against 58; less activity in 130 against 109; and low prevalence in 491 against 477. Of the 45 districts, 19 returned enhanced mortality against 22 in the preceding year.

Comparative mortality from Fever in the Urban and Rural circles.

91. To the total mortality of the year the urban circles contributed 34,025 deaths, or in the proportion of 13·77 per 1,000 of population, and the rural circles 879,741 deaths, or at 13·81 per 1,000. The returns of the preceding year furnishing corresponding information exhibit for the urban circles 38,792 deaths, or at 15·72 per 1,000, and for the rural circles 891,151 deaths, or at 14 per 1,000. The comparison shows a diminution in mortality in both the urban and rural circles, particularly in the former. It is noticeable, moreover, that in 1883 the death-rate in the rural circles was somewhat greater than in the urban circles. Considering that the former are better registered, it appears that fever was more fatal in the rural than in the urban circles.

92. The seasonal incidence of fever, as illustrated by the figures given in the margin, again confirms the observations made year by year, viz., that the disease exhibits progressive severity after the rains have well set in, and is most fatal during the period January, October, November and December, especially during the two latter months, when the sodden soil is rapidly drying, and there is a great daily range of temperature.

Seasonal incidence of Fever.

Months.	Deaths in 1883.	Rainfall in 1883.	Average deaths in 1878-82.
December	113,449	1·36	94,449
November	108,835	·12	93,156
October	85,673	·99	75,808
January	83,949	·69	71,597
September	77,233	6 72	62,216
August	70,597	12·04	59,349
April	68,439	2·40	58,574
February	65.425	·46	55.921
March	64,785	1 51	58,049
July	61,552	14·30	52,521
May	59,243	4·65	53,906
June	54,541	13 60	49,575

93. The marginal table indicates that again the highest suffering from fever was limited, with six exceptions, to the districts in the Burdwan, Presidency and Rajshahye divisions, Rajshahye heading the list instead of Nuddea which had held this position since 1880. It is gratifying, however, to find that the fatality of the disease had diminished in all these districts, excepting Rajshahye, Jessore and Pubna, and especially in Nuddea where the mortality appears to have come down to normal proportion.

Districts in which Fever prevailed most severely.

Districts.	Ratio per *mille*. In 1883.	Ratio per *mille*. In 1882.
Rajshahye	30·12	24·24
Nuddea	27·60	30 50
Burdwan	28·35	28·86
Jessore	23·14	22·93
Pubna	22·43	17·97
Birbhum	22·27	27·62
Murshidabad	21·79	26·01
Bogra	19·31	19 72
Khulna	17·53	18·65
Dinagepore	17·17	15·61

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94. The information under this head is almost identical with that submitted in the Reports of former years, and need not therefore be recapitulated.

Causes of Fever and measures adopted to arrest it.

History of the incidence of Fever in the districts.

95. The leading and noteworthy information relating to the incidence of fever in each district is subjoined.

BENGAL.

Fever in the Bengal division of the Province.

96. In Bengal fever prevailed, as usual, with considerably greater severity than in the other three divisions of the Province, Behar, Orissa and Chota Nagpore. Its incidence, as compared with the preceding year, exhibited very little variation, for while in 1883 the casualties numbered 576,474, and the death-rate amounted to 16·43 per 1,000 among a population numbering 35,073,770, 1882 returned 584,704 deaths, or at the rate of 16·67 per 1,000. The most unhealthy months were January and September to December.

97. *Burdwan.*—Although third on the list of severely fever-stricken districts, the prevalence and severity of the disease in Burdwan had diminished sensibly during the year under review in comparison with the preceding year. 88 against 92 per cent of its villages was pervaded by the disease; the recorded deaths amounted to 32,502 against 40,173, and the death-rate to 23·35 against 28·86 per 1,000 of population. January to April and November and December were the most unhealthy months, and the rainy months the most healthy; and the suffering was greatest in the areas marginally indicated. No information referring to local outbreaks of, or other particulars relating to, the disease has been furnished by the Civil Surgeon; but he believes that at least 50 per cent. of the deaths returned under the head of fever is due to other totally different diseases, particularly inflammatory chest affections. The statistics under this head are, consequently, misleading when used as a test for gauging the malarious character or otherwise of the district. He is also of opinion that the fever of past years known as the "Burdwan fever" has disappeared to a large extent from Burdwan, and has invaded the adjoining districts of Nuddea and Birbhum.

	Ratio per *mille.*		Ratio per *mille.*
Kaksa thanah ...	28·85	Khandghosh thanah	25 73
Ausgram " ...	28 54	Purbasthali " ...	25·39
Burdwan town ...	27 84	Bud-Bud " ...	25·22
Kalna thanah ...	26 90		

98. *Bankura.*—In this district, the deaths numbered 17,418, or at 16·71 per 1,000 of population, against 27,508 or at 26·40 per 1,000, showing a decrease in deaths of 10,090 and in the proportion in relation to population of 9·69 per 1,000; but the population of villages affected by the disease was in excess by 13 per cent. The months in which the highest mortality occurred were January and August to December, and the circles named in the margin suffered the most, of which all the villages in Sonamukhi were affected. With reference to these circles, which are situated in the east of the district, the Civil Surgeon, Dr. Ghose, says that, their climate and soil are similar to those of Burdwan, and that they suffered the most throughout the year, except in June and July; while, on the other hand, the thanahs which compose the laterite tract were invaded by the disease, in its severe form, for only a month or two after the cessation of the rains, and these facts, he submits, indicate clearly that ground moisture is one of the conditions under which the disease prevails. His experience in Rungpore, he asserts, was confirmed on his visiting the thanahs of Bissenpur and Anda, viz., that localities where the drainage is defective, or which adjoin a marsh, suffer from fever in its endemic form, while well-drained places suffer during the rains, and enjoy immunity directly the cold weather sets in. He instances two villages, Anda and Ajoodhya, not far from each other, the former having a marsh behind it, and the latter situated on the banks of the Dalkisser river which carries away the rain water from the village. In Anda the people were suffering severely in January and deaths were frequent, while in Ajoodhya the people were healthier, but said that fever prevailed among them in August, September and October. On examination a strikingly larger percentage of people with enlarged spleen and malarial cachexia were seen at Anda than at

	Ratio per *mille.*		Ratio per *mille.*
Bissenpur town ..	27·86	Sonamukhi thanah...	21·95
Bissenpur thanah ...	24·30	Sonamukhi town ...	20·84
Kotalpore " ...	22·79	Indus thanah ...	19·75

Ajoodhya. Again, the Bissenpur town, which has a marsh on the west and south of it, presents a sad spectacle of disease and death. He is, therefore, of opinion that soil moisture is not *per se* the cause of fever, but that "so long as the contagion, whatever it might be, was not introduced either by human agency or from village to village by the wind, the humidity of the soil did no harm, but the contagion once falling on congenial ground multiplied in abundance in proportion to the soil moisture, and caused the disease. Where the moisture in the soil, owing to the proximity of a marsh, is perennially damp, there the fever prevails the most."

99. In the *Birbhum* district the percentage of villages attacked by the disease was 80 against 77 in the preceding year, and the deaths numbered 17,698, or at 22·27 per 1,000 of population against 21,945 or at 27·62 per 1,000, indicating a diminution of mortality. The months in which the disease prevailed most were January and August to December, and the marginally noted areas returned the highest mortality, thus showing that the disease in its severe form was present in every thanah of the district except Monreswur. It was observed that in the town of Soori there was, on the whole, less fever than in former years; that most of the fatal cases occurred in chronic sufferers; that the number of those who suffered from the disease in its acute stage were few; that when death overtook even these, it was after complications, such as pneumonia, coma, or convulsions, had set in; and that the fever was general among the European community, scarcely any member of a family escaping it. The Civil Surgeon Dr. Roy's opinion as to the causation of fever coincides with that of Dr. Ghose of Bankura, for he says that to the dryness of the soil the lesser prevalence of fever may be ascribed, while, on the other hand, prolonged dampness and moisture bring about the opposite condition.

	Ratio per mille.		Ratio per mille.
Soori thanah ...	... 26·92	Sakulipore thanah ...	22·50
Soori town ...	... 24·97	Nalhatti „ ...	20·89
Bolpur thanah	... 24·68	Ramporehat „ ...	20·10
Dubrajpore „ ...	... 22·98		

100. In the *Midnapore* district 38,570 deaths were recorded in 65 per cent. of the villages, against 39,626 in 69 per cent. in 1882, the proportion of deaths to population being 15·31 against 15·73 per 1,000. These figures do not represent a greatly reduced mortality. November and December were the worst months, and the suffering was greatest in the circles named in the margin. Naraingbar, which has of late years returned a heavy mortality, again heads the list; but the death-rate was lower than in 1882 by so much as 6·36 per 1,000 of population. Dr. Tomes, the Civil Surgeon, remarks that, his anticipation (expressed in his Report for 1881) that the prevalent epidemic fever would extend over the south of the alluvial and littoral portion of the district has been realized, for the thanahs which are situated in this area have all returned a heavier mortality in comparison with 1882, while, on the other hand, the north-east of the district, which was first invaded, suffered to a less extent than in 1882. An examination of the mortuary figures confirms these observations.

	Ratio per mille		Ratio per mille.
Naraingbar thanah	... 25·51	Debra thanah	... 22·11
Dantun „	... 25·29	Keshpore „ ...	... 21·05
Pataspur „	... 24·11		

101. *Hughli.*—The sickness and mortality in this district had also diminished. Seventy-eight per cent. of the villages were affected against 99 in 1882, and the deaths amounted to 14,526 or at 14·34 per 1,000 of population, against 17,305 or at 17·08 per 1,000. To this mortality Serampore contributed 3,668 casualties or at 10·42 per 1,000 of its population, as opposed to 4,328 deaths or at 12·29 per 1,000. November and December were the worst months, and in only the Hughli, Polba, Balagarh and Pandua thanahs the mortality was noticeably high, the death-rates furnished by them being 32·28, 22·17, 21·61, and 19·58 per 1,000 of population respectively. The Sanitary Reports of this district do not contain any noteworthy information, except that it has been noticed for many years that in the sub-division of Serampore a definite relation exists between the quantity of rainfall and fever and fever mortality, that is a large rainfall is followed by increased sickness. The rains ceased prematurely in September 1882, and there was an early and unusually severe cold weather. The result was that malarious fevers were kept down.

102. In *Howrah* the prevalence and fatality of fever had increased to a small extent, but this increment was not confined to any particular circle, for none of the circles exhibited a noticeably high death-rate. The recorded deaths amounted to 5,353 in 64 per cent. of the villages, and the casualty-rate to 8·42 per 1,000 of population, the corresponding figures of the preceding year being deaths 4,634 in 62 per cent. of the villages and death-rate 7·29 per 1,000.

103. *24-Pergunnahs.*—Although, in comparison with 1882, the disease prevailed more extensively in this district, the mortality was to some extent lower, for 87 against 79 per cent. of the villages was pervaded by it, and the deaths numbered 27,499 against 29,238, and the death-rate amounted to 14·70 against 15·07 per 1,000 of population. In seasonal fatality January, November and December took the lead, and in the areas named in the margin the mortality was conspicuously great. Every village in the Deganga thanah was affected by the disease. The Sanitary Reports from this district contain no special information that need be recorded.

	Ratio per *mille.*		Ratio per *mille.*
Habara thanah ...	27·86	Naihatti thanah ...	22·84
Bassirhat town ...	25·72	Barrackpore „ ...	20·08
Deganga thanah ...	23·37	Baduria „ ...	19·67

104. *Nuddea* occupies the second place in the list of districts which suffered most from fever in 1883, but it is very gratifying to find from the subjoined table* that, although the severity of the disease is yet great in several places, a progressive improvement has occurred, on the whole, since it visited the district with unprecedented severity in 1880, inasmuch as the death-rate has decreased from 35·54 per 1,000 of population in 1881 when the disease exhibited maximum epidemic virulence, to 27·60 per 1,000 in the year under review:—

		1883.	1882.	1881.	1880.
PERCENTAGES OF VILLAGES IN THE DISTRICT ATTACKED BY FEVER ...		96	92	94	96
MORTALITY IN—					
Sudder Sub-division.					
Kaligunge	R.	39·06	55·52	74·27	34·64
Hanskhalli	„	37·38	44·06	61·07	41·21
Nokashipara	„	36·86	45·86	41·37	39·56
Kishengunge	„	30·70	46·66	61·29	40·12
Kishnaghur	T.	30·35	34·42	40·56	54·01
Ditto	R.	26·08	28·79	46·37	27·89
Chapra	„	22·28	38·87	48·73	30·21
Nobodip	T.	14·10	14·08	Deaths were not separately registered.	
Total of sub-division ...		30·66	40·46	47·02	32·10
Ranaghat Sub-division.					
Santipore	R.	31·14	36·97	32·11	28·99
Jaguli	„	29·18	28·74	20·83	29·57
Chagda	„	26·95	25·76	22·86	18·18
Ranaghat	„	25·64	29·20	32·74	25·47
Santipore	T.	21·89	25·73	33·10	29·64
Ranaghat	„	19·92	24·30	26·37	31·22
Total of sub-division ...		26·44	28·38	26·49	24·06
Kushtia Sub-division.					
Noupara	R.	29·15	21·88	46·05	32·36
Daulatpore	„	27·05	24·81	19·71	17·69
Khumarkhali	„	24·93	15·19	22·42	17·56
Bhaluka	„	24·85	18·96	28·33	28·76
Kushtia	„	23·86	21·38	33·70	20·83
Bhadulia	„	21·88	15·78	25·55	20·24
Kushtia	T.	12·65	12·14	7·46	9·95
Total of sub-division ...		25·79	19·46	24·32	19·32
Chuadanga Sub-division.					
Chuadanga	R.	32·95	35·97	69·50	35·06
Jabunagar	„	31·45	42·49	39·21	28·73
Damurhuda	„	28·02	46·56	32·67	18·74
Alumdanga	„	26·87	26·52	35·73	24·99
Kalupol	„	26·11	35·40	50·06	30·71
Total of sub-division ...		28·28	36·16	37·85	24·01

	1883.	1882.	1881.	1880.
Meherpore Sub-division.				
Meherpore T.	31·05	31·23	36·67	57·53
Tehatta R.	29·59	37·39	46·66	33·91
Gangni "	28·40	33·09	38·55	26·72
Meherpore "	27·15	32·41	190·93	157·88
Karimpore "	23·11	24·03	33·72	23·60
Total of sub-division ...	26·91	31·31	42·34	31·46
DISTRICT TOTAL ...	27·60	30·50	35·54	26·11

* As the Bongong sub-division was transferred from this district to Jessore in 1883, its statistics have been omitted from this table for all the four years, in order that the comparison of results may be fairly considered.

This table discloses, moreover, that the suffering was greatest in the Sudder and least in the Kushtia sub-division, as compared with the rest of the sub-divisions, throughout the four years the statistics of which are embraced in it; that while the Meherpore sub-division suffered in a secondary degree in 1880 and 1881, the Chuadanga sub-division assumed this position during the two following years; and that individually considered the under-mentioned areas continue to present very high death-rates:—

	Ratio per *mille.*		Ratio per *mille.*
Kaligunge thanah	39·06	Meherpore town	31·05
Hanskhalli "	37·38	Kishengunge thanah	30·70
Nokashipara "	36·86	Kishnaghur town	30·35
Chuadanga "	32·95	Tehatta thanah	29·59
Jabunnagore "	31·45	Jaguli "	29·18
Santipore "	31·14	Naupara "	29·15

It is noticeable, however, that the Kushtia sub-division exhibited greater mortality in 1883 than during the preceding three years, the death-rate having risen from 19·32 per 1,000 of population in 1880 to 25·79 per 1,000.

The nature, seasonal fatality, and causation of the fever in this district have been fully dwelt upon in former Reports. The incidence of the disease during the year under review presents no new feature, except that the deficient rainfall of the year may have had a share in reducing its intensity. All the medical assistance that was needed was supplied by the Government.

105. *Jessore.*—This district is the fourth on the list of severely fever-stricken districts in 1883. The disease prevailed in it much more extensively and fatally than in the preceding year, as indicated by the following figures:—Percentage of villages affected by the disease 83 against 71; deaths 44,882 against 34,090; and proportion of deaths per 1,000 of population 23·14 against 22·93. Its severity was felt most during the months of January and October to December, and the 16 circles named in the margin out of the 22 in the district furnished conspicuously high death-rates. The prevalent fever was of the ordinary intermittent type, generally accompanied by enlargement of the spleen and anœmia.

	Ratio per *mille.*		Ratio per *mille.*
Jhenida thanah	31·05	Narail thanah	24·18
Salikha " ...	30·25	Monirampore " ...	23·77
Sarsha " ...	29·14	Magura " ...	23·69
Lohagara " ...	28·46	Bagherpara " ...	22·19
Ganapota " ...	26·69	Salkopa " ...	21·90
Bongong " ...	26·41	Harinakundu " ...	20·56
Kaligunge " ...	25·44	Mohespore " ...	20·51
Jessore town ...	25·30	Gaighatta " ...	20·30

The Civil Surgeon again refers it to the obstruction of the natural drainage of the country for the purpose of growing paddy, but the Magistrate doubts this statement. No further account has been furnished regarding the exceptionally severe prevalence of the disease; but it will be noticed that among the thanahs of severest suffering given in the margin are the five thanahs of Sarsha, Ganapota, Bongong, Mohespore and Gaighatta in the Bongong sub-division transferred from Nuddea to this district, which have been the scene of severe prevalence of the disease since 1880.

106. The prevalence and fatality of the disease had subsided to a great extent in *Khulna.* The percentage of villages embraced by it was 79 against

86; the recorded deaths numbered 18,941 against 20,144; and the death-rate amounted to 17·53 against 18·65 per 1,000 of population. In only the Magura, Bagirhat and Baitaghata thanahs the suffering was prominently high, the death-rates presented by them being 20·76, 20·25, and 19·97 per 1,000 of population respectively. The villages of Chanduria, Kadpur, Goalpara, Chondunpur and Gayrah in the municipality of Chanduria also suffered severely.

107. *Murshidabad.*—Twenty-six thousand seven hundred and thirty-four deaths, or at the rate of 21·79 per 1,000 of population, were recorded in this district in 92 per cent. of the villages, as opposed to 31,921 deaths, or at 26·01 per 1,000, in 94 per cent. of the villages in 1882. The 19 marginally noted circles out of a total of 27 into which the district is divided, returned conspicuously high death-rates. Of these circles the whole of the villages in thanahs Shahanagar, Bhagwangola, Dewanserai, Gorabazar, Hariharpara, Daulatbazar were pervaded by the disease. These statistics denote that, although the disease was still very diffused, its prevalence and fatality had abated, the latter notably. It did not assume anywhere an epidemic character as in the two preceding years; in fact, it is, as reported before, endemic to the district referable to its physical formation. It was present pretty evenly throughout the year, but was, as usual, severest during the four months following the cessation of the rains, September to December. There was considerably less rainfall during the year, viz., 42·19 inches against 52·79 inches in 1882 and 56·29 inches, the average of the preceding 10 years. Past experience justifies the Civil Surgeon in stating that there is usually with an excess of rainfall an increase of fever.

	Ratio per *mille.*		Ratio per *mille.*
Maoulabazar thanah.	39·41	Gorabazar thanah	24·77
Shahanagar „ ...	31·02	Raghunathganj „ ...	24·70
Assenpur „ ..	33·64	Goas „ ...	22 97
Bhagwangola „ ...	31·18	Kalliangunge „ ...	22·51
Jelinghi „ ...	30 95	Mirzapore „ ...	22·77
City Murshidabad ...	28·52	Hariharpara „ ..	21·82
Shujagunge thanah ...	28 04	Shamshergunge „ ...	20·09
Sagardighi „ ...	26·92	Gokarn „ ...	19·78
Nowada „ ...	25·62	Daulatabazar „ ...	19·38
Dewanserai „ ...	24 83		

108. In the *Dinagepore* district, although the disease was considerably more widespread, it was much less fatal than in 1882. Eighty per cent. of the villages were affected against 70 per cent., and the deaths amounted to 26,014 or at 17·17 per 1,000 of population, against 23,648, or at 15·61 per 1,000. The areas indicated in the margin were those in which the suffering was greatest. The severity of fever is said to bear in this district apparently, some relation to climatic changes. In the early months fresh cases of the disease are rare, the sufferers being those who had been severely attacked during the rains of the preceding year, and whose vitality had been lowered. About October, the action of the cold is very prejudicial, so that chronic cases who are unable to stand any further strain on an already lowered vitality and shattered nervous system succumb in large numbers in November and December. The effect of the drainage scheme on the health of the town of Dinagepore commenced in 1879 on the recommendation of a Committee appointed to enquire into the causes of the great unhealthiness of the place, and completed in 1881, may be judged by the figures given in the margin. I am not at present prepared to say that the scheme has fulfilled the hopes of its originators. Some further improvements are, however, contemplated, which may be followed by more decisive results.

	Ratio per *mille.*		Ratio per *mille.*
Dinagepore thanah...	71·91	Mohadebpur thanah	21·34
Nawabgunge „ ...	25·27	Parbatipur „	20·53
Porsha „ ..	24·03	Patiram „	20·40
Gungarampore „ ...	22·20		

	Ratio per *mille* from— Fever.	All Causes.
Mean mortality for 1874 to 1878	12·44	25·56
Mortality in—		
1879	14·10	23·00
1880	14·71	21·70
1881	12·02	19·74
1882	13 69	19·98
1883	17·11	22·29

109. *Rajshahye.*—This district occupies the first place on the list of districts which suffered most severely from fever. Ninety-one per cent. of its villages, against 90 in 1882, was ravaged by the disease, and it recorded 40,331 deaths, or at the rate of 30·12 per 1,000 of its population, against 32,450 deaths, or at 24·24 per 1,000, indicating that both the sickness and mortality had increased, the latter

very considerably. The disease prevailed with marked severity during every month of the year, excepting May and June. All the circles, excepting the Beauleah and Nattore towns, returned conspicuously high death-rates, *vide* table in the margin; and every village in all these circles, excepting Manda, Singra and Godagari, was pervaded by the disease.

	Ratio per *mille*.		Ratio per *mille*.
Putia thanah ...	41·09	Burigram thanah...	28·98
Lalpur „ ...	38·90	Panchpore „ ...	25·29
Baghmara „ ...	35·44	Manda „ ...	24·34
Charghat „ ...	33·29	Naugaon „ ...	24·33
Nattore „ ...	30·89	Singra „ ...	22·73
Beauleah „ ..	29·76	Godagari „ ...	22·26
Tanor „ ...	29·59		

Dr. Bensley, the Civil Surgeon, has recorded the opinion in his Reports for several past years, that the health of this district has been gradually deteriorating. Fevers, chiefly of the intermittent type, recurring frequently, and complicated with enlargement of the spleen and liver, anæmia and malarial cachexia, have been prevailing widely and with great fatality throughout the district. Thanahs Tanor, Beauleah and Putia, notably the Doorgapore outpost situated in the last named thanah, have been suffering persistently for the past six years, *vide* table given in the margin.

Years.	Ratio per *mille* in— Tanor.	Beauleah.	Putia.
In 1878 ...	22·04	31·35	18·70
„ 1879 ...	17·75	24·76	12·92
„ 1880 ...	26·70	30·48	27·23
„ 1881 ...	24·92	31·54	28·08
„ 1882 ...	22·01	28·27	29·87
„ 1883 ...	29·59	29·76	41·09

The chief cause of the suffering is attributed to a deficient and vitiated water-supply, and how this was brought about has been described in the Report for 1882. This year, owing to a deficient rainfall and absence of floods, the evil has been intensified everywhere, excepting in the southern parts of the district which lie on the banks of the river Ganges. This opinion is endorsed by the Magistrate, who adds that many good tanks of former years have been neglected, so that now most of the village tanks contain decomposed water. It is believed that the Road Cess Committee have in view a project for clearing out the waterways that used to feed the Haja nuddi, but this, the Civil Surgeon notes, will benefit only a portion of the country. The radical remedy is good tanks and wells, but these the people do not supply owing to their ignorance of the benefits of good water and pretended poverty; nor will the zemindars render assistance in this matter, although the cost of a good well is only 5 rupees, as they are fatalists and look upon the occurrence of sickness as calamities that human agency cannot control. Dr. Bensley suggests that, as at present the scarcity of water in the district is so serious as to threaten a wide-spread and severe prevalence of fever among the people, the executive officers of the district should take up the question, and stimulate the people to self-help, either by persuasion or, what is better, by providing the want at their (the people's) expense. The present state of the law will, however, not admit of the latter suggestion being given effect to. It is gratifying to record that the towns of Beauleah and Nattore have not only suffered less from fever, but that their general health has improved. This is referred to the sanitary improvements that have recently been carried out in them, chiefly with regard to water-supply, by the introduction of river water into the reserved tanks, clearing out old tanks, &c.

110. In the *Rungpore* district, fever prevailed much more extensively and fatally than in the preceding year, as will be seen from the following figures. The percentage of villages affected amounted to 55 against 45, and the mortality was represented by 32,897 deaths, or in the proportion of 15·68 per 1,000 of population, as opposed to 24,123 deaths, or at 11·49 per 1,000. November and December were the worst months, particularly the latter, and the areas of greatest suffering were those named in the margin.

	Ratio per *mille*.		Ratio per *mille*.
Mithapukhr thanah...	24·67	Ulipore thanah ...	19·45
Maigunge „ ...	23·26	Rungpore town ...	19·06
Nageshwari „ ...	21·15		

In common with the district, the Rungpore town suffered somewhat more severely than during the preceding year. The Magistrate very graphically describes the effects of the disease prevalent in it. He says, that nearly every morning on arrival in kutcherry he found a little pile of letters from the amlah asking to be excused attendance on account of fever; that many had to go away to their homes more or less invalided; that he himself, who had never been ill for 20 years, had an attack; that up-country men suffered particularly, being

unable to shake off the disease like natives of the district; that nearly all who were in the service of the Europeans had been laid up, and that of their number some died, others were dying, and the rest had to go away to their homes in a drier climate. The unusual rainfall in April and May lowered the temperature to a point which, although pleasant to the Europeans, did not agree with the natives, and the deficient fall in September with a total absence of rain during all October and November brought in early an unusually cold weather, which could not be withstood by a people who are feeble in constitution and poor in physique. But, notwithstanding the ravages of the fever in the Rungpore town, as above described, the figures in the margin conclusively indicate that the drainage scheme commenced in 1878 and completed in 1882, which had for its object the improvement of the health of the town, has done its work, for a comparison of the mortality from fever and all cause combined from 1878 when the drainage scheme was inaugurated, with the mortality during the quinquennium 1873 to 1877, the period anterior to the commencement of the scheme, shows that synchronously with the advancement of the project a marked improvement was observed in the health of the town, due allowance being made for improvement in registration. The scheme, however, is only a partial one and does not drain many extensive swamps to the east of the town which undoubtedly exercise a prejudicial effect on its health.

	Ratio per *mille* from— Fever.	All Causes.
Mean mortality of 1873 to 1877 ...	19·95	36·88
Mortality in—		
1878	20·20	34·22
1879	13·06	24·82
1880	18·15	25·54
1881	19·21	26·50
1882	18·39	23·64
1883	19·06	29·57

111. In the *Bogra* district there was a marked decline in the prevalence of the disease with a small reduction in mortality, as the percentage of villages attacked was 62 against 69, the deaths numbered 14,184 against 14,487, and the death-rate amounted to 19·31 against 19·72. As usual, the fever was noticeably and steadily severe during the rains and in the concluding quarter of the year, particularly during the latter period when the sufferers had been enfeebled by repeated attacks of the disease, and the weather was cold. The circles marginally noted returned the highest death-rates. In thanahs Panchbibi, Khetlal and Badalgachi, situated respectively in the north, west and extreme west of the district, rank vegetation and dense jungle abound, and the drainage is defective; and it has been noticed that thanahs Sherpur, Shibgungo and Panchbibi have been suffering severely from the disease for the past seven years.

	Ratio per *mille*.		Ratio per *mille*.
Panchbibi thanah ...	26·18	Sherpur thanah ...	21·26
Badalgachi „ ...	25·70	Khetlal „ ...	20·66
Shibgunge „ ...	22·49	Bogra town ...	19·90

112. *Pubna.*—In this district the incidence of the disease was much more severe than in the preceding year. The percentage of villages covered by it was 69 against 61, and the casualties amounted to 29,134, or in the proportion per 1,000 of population of 22·43 against 23,575 deaths, or at 17·97 per 1,000. The months of greatest suffering were January and October to December, and in the localities indicated in the margin the greatest mortality occurred. It was observed that "a scanty rainfall was attended with great increase of fever," and that "the reduction of temperature had, by inducing severe complications in fever cases during the cold season, given rise to high mortality." Of local outbreaks of the disease, the Civil Surgeon quotes one which occurred in certain parts of the Serajgunge town. Here he says, the fever was of the remittent type and prevailed in April with great virulence and speedy fatality; the villages attacked are situated on low, undrained, swampy land, surrounded by dense clumps of bamboos preventing perflation and sunlight, and honey-combed with filthy excavations which receive night-soil, cowdung, kitchen-refuse and house drainage; and uncovered municipal trenches exist in close proximity to the town. He adds that this year the inundations did not, as they usually do, scour out these excavations, as the culvert or sluice through which the Katti khal water flows into the village was shut up by the municipality.

	Ratio per *mille*.		Ratio per *mille*.
Chatmohar thanah ...	35·39	Raigunge thanah ...	26·37
Dulai „ ...	30·67	Pubna town ...	22·99
Pubna „ ...	30·45	Mathura thanah ...	22·76

113. In *Darjiling* the disease proved somewhat more fatal than in the preceding year. Nine hundred and nineteen deaths, or in the proportion of 5·88 per 1,000 of population, were reported from 32 per cent. of the villages, as opposed to 763 deaths or at 4·91 per 1,000. May, June and July were the most unhealthy months, and in the Darjiling town (8·77 per 1,000) and Kalimpong rural circle (8·12 per 1,000) the severest mortality occurred. The Sanitary Reports do not contain information possessing any special interest for reproduction here.

114. *Julpaiguri.*—The prevalence and fatality of fever in this district had declined to a small extent in comparison with its incidence in 1882, as the records indicate that 7,796 deaths, or at 13 40 per 1,000 of population, occurred in 40 per cent. of the villages, against 8,138 deaths, or at 13·99 per 1,000 in 43 per cent. of the villages. January and October to November were months of severest suffering, and only the Salbari rural circle presented a conspicuously high death-rate, 22·07 per 1,000 of population. Referring to the nature of the fever prevalent in this district, the Civil Surgeon observes:—"Repeated attacks of ague produce enlarged spleen and liver, intense anæmia, spongy gums, ascitis, and anasarca, and when in such condition diarrhœa or the asthenic form of dysentery supervenes, death very quickly results." It is stated that the Duars, which are very unhealthy for both Europeans and natives, are being gradually converted from an impenetrable jungle into tea gardens, and that when the overgrown and rank jungle is cleared away, improvement in the health of the people will follow.

115. In the *Dacca* district fever prevailed less extensively but somewhat more fatally than in the preceding year. Fifty-six per cent. of the villages were affected against 60, and the deaths amounted to 28,358, or at 13·39 per 1,000 of population, against 27,150 deaths, or at 12 82 per 1,000. January, November and December were the worst months; and the areas indicated in the margin suffered the most. Dr Crombie reiterates his belief, and the Magistrate, Mr Wyer, from his experience in Faridpore, endorses it, that the causes which determined the variations in the incidence of fever in the various parts of this district are, "the general tendency towards silting up of the whole river system in the district owing to changes in the course taken by the bulk of the Brahmaputra water, which instead of passing, as it formerly did, through the extreme eastern portion of the district into the Megna, now flows to the west of it through the Jumuna into the Pudma Ganges. This is a general cause affecting the whole district, but certain portions of it being surrounded on all or several sides by rivers which have ceased to be navigable, except in the rains, and are at the same time underlain by an impermeable layer of blue clay, have been chiefly affected by this cause. These portions of the district are comprised in the circles of Manikgunge, Jaffirgunge, Harrirampore and Nawabgunge, and in these areas the mortality from fever has indeed been severest," *vide* table furnished above.

	Ratio per *mille*		Ratio per *mille.*
Manikgunge town ...	29·23	Manikgunge thanah	18·92
Jaffirgunge thanah ...	26 02	Nawabgunge „	17·31
Harirampore „ ...	24·02		

116. *Faridpore.*—The sickness and mortality in this district were greater in comparison with their incidence in 1882. It recorded 16,482 deaths, or in the proportion of 10·10 per 1,000 of population, as occurring in 57 per cent. of the villages, in opposition to 13,998 deaths, or at 8·57 per 1,000, in 54 per cent. of the villages. The months of greatest suffering were October, November and December, but only the Faridpore municipality returned a conspicuously high death-rate. Up to September there was nothing unusual in the character of the disease. After this it assumed a severe form, proving more fatal, month by month, to the end of the year, and prevailing epidemically in some parts of the district. It was, however, observed that, although the mortality was highest in December, the number of fresh cases had lessened, the deaths occurring, as usual, among those who were suffering from the sequelæ of the fever The fever is reported to be of a malarious type and endemic to the district; not imported. In the Faridpore municipality, including the civil station and seven villages within a radius of about six square miles, it prevailed severely, in some parts epidemically, but least in the town portion. About four-fifths of the inhabitants had one or two attacks during the last quarter; many had two or three relapses, and in a great number

of the poorer classes enlargement of the spleen and liver, jaundice, diarrhœa and, in some cases, dropsy supervened. The oldest inhabitants of the town said that they had not seen the disease prevail with such intensity within the last 15 or 16 years. The Civil Surgeon ascribes the fever in the district in general, and in the town in particular, to local insanitary conditions, want of conservancy arrangements, defective drainage, bad water-supply, absence of perflation of air and light caused by trees and shrubs growing in close proximity to dwellings, interments within the compound of houses, crowding in small huts, exposure to alternations of climate, obstruction of the natural drainage from silting up, and changes in the river system and from other causes, absence of floods to scour away accumulations of filth and other impurities, and the comparative greater and more rapid drying up of the soil by evaporation.

117. The *Backergunge* district with a further extension of the disease returned a much lower mortality than in 1882. The percentage of villages affected by it was 65 against 58, and the mortality was represented by 27,710 deaths, or at the rate of 14·57 per 1,000 of population, against 31,994 deaths, or at 16·83 per 1,000. Only the Medhigunge and Barisal thanahs suffered with anything like noticeable severity, the death-rates in them being 18·79 and 18·34 per 1,000 of population respectively. Although the insanitary conditions prevailing in Medhigunge are not greater than elsewhere, there are extensive churs in it covered with null and hogla; the drainage is imperfect; and, being situated on slightly higher ground than the other thanahs, is never long submerged during the greater part of the rains. The disease is said to prevail most in this district during the hot months, when the rains are absent, and the subsoil water is low, and again during the cold months when, in addition, the temperature is depressed, causing chills which predispose the native constitution to attacks of fever. In the Civil Surgeon, Dr. Meadow's opinion, Backergunge is by no means a malarious district, as only mild cases of ague, as a rule, are seen, remittents or chronic malaria being rarely met with.

118. In the *Mymensing* district the disease was considerably more diffused and fatal than in the preceding year. Twenty-five thousand one hundred and thirty-eight deaths, or at the rate of 8·23 per 1,000 of population, were reported from 41 per cent. of the villages, against only 16,514 deaths, or at 5·41 per 1,000, in 20 per cent. of the villages. November and December were the worst months, and in only three circles, viz., the town of Jamalpore (20·07 per 1,000) and the rural areas of Pingna (19·27 per 1,000) and Kishorgunge (19·22 per 1,000), the mortality was noticeably high. The localities near the Garrow Hills and the Madhupore forest, where jungle and rotting vegetation abound, and the condition of the tanks is bad, again suffered severely from fever. The Sudder station and its surroundings are said to have grown more malarious during the past four or five years. This is referred to the silting up of the river Brahmaputra increasing year by year, so that its volume of water is at present little more than half what it was five years ago. The silting and drying up of the rivers is said to seriously and materially obstruct the drainage not only of the Sudder station, but also of a large tract of the district, where also the means of communication and traffic are considerably curtailed. This action of the river of late is believed by the Magistrate to be chiefly attributable to the Public Works Department having ceased to keep up the bamboo weirs to concentrate the flow in one channel during the cold weather, in order that the channel might be made deeper for navigation, but which has now been given up owing to the new Railway being in course of construction. A large number of kutcha houses, huts and jungle in the town have, however, been removed in connection with the Railway, and this, it is hoped, will prove beneficial to the health of the people. The type of the prevalent fever is reported by the Civil Surgeon to be of a low rather than an acute character, and its duration somewhat prolonged. He has, however, no reason to believe that there was increased mortality from this cause, although the recorded number of deaths, as shown above, is numerically much larger than the numbers of preceding years. In this district "the physique of the people generally is decidedly poor, the average weight of an adult male being only about 104lbs. with an average height of 63½ inches.

119. *Chittagong.*—In this district also the fever was more widespread, but the mortality lower, in comparison with the outcome of the preceding year, as 79 against 62 per cent. of the villages were affected, and 11,444, or 10·10 per 1,000 of the population against 13,648 or 12·05 per 1,000, died. January and December were the most sickly months, but no area in the district exhibited an exceptional death-rate, although all the villages in the Mirserai, Satkanya and Hathazari thanahs were pervaded by the disease.

120. The incidence of the disease in *Tipperah* was similar to that in Chittagong, for 68 against 56 per cent. of the villages were involved, the mortality stood at 14,598 deaths, or at the rate of 9·60 per 1,000 of population against 14,995 deaths, or at 9·86 per 1,000, and January, November and December were the most unhealthy months. Here also in no area did the mortality rise to a noticeable rate. With regard, however, to the distribution of fever in the district, the Civil Surgeon writes:—"The most unhealthy parts of this district are those towards the west, where the general level of the land slopes towards the river Megna, which with its numerous tributaries keeps the soil water-logged and the sub-soil water level close to the surface. On the other hand, in the eastern portion, where the general level of the ground rises gradually as the district debouches into Hill Tipperah, and where the natural drainage is better and the soil less water-logged, the prevalenc of fever, in fact of all diseases, was less."

121. In the *Noakhali* district the area affected by the disease was the same as in the preceding year, viz. 71 per cent. of the villages, and the mortality somewhat lower, the casualties amounting to 11,341 against 11,725, or in the proportion per 1,000 of population of 13·81 against 14·28. Here also the months in which the largest number of deaths occurred were January, November and December. Only the Hattia thanah suffered exceptionally, its death-rate being 21·19 per 1,000 of population. It is said that the fever in this district is not of a fatal type at its onset, but that if it continues for a time, it brings on spleen and liver complications and general cachexia with its attendant diseases and eventual death. It is referred to dampness of the soil caused by the annual submersion of the country during the rains.

BEHAR.

122. The fever statistics of this division of the Province for the year under review present very little variation in comparison with those for the preceding year. The deaths numbered 261,331, being in the proportion of 11·29 per 1,000, among a population numbering 23,127,104, as opposed to 266,051, or at the rate of 11·50 per 1,000, in 1882. In seasonal incidence July to December exhibited higher mortality than the other months.

123. *Patna.*—The prevalence and fatality of fever in this district exhibited great diminution in contrast with the returns of 1882. 71 against 99 per cent. of the villages were affected, and the deaths amounted 22,790, and the casualty-rate to 12·97, against 31,131 deaths and 17·71, the death-rate per 1,000. July to December were the most fatal months, and the Dinapore and Barrh rural circles suffered the most, the casuality-rates in them being 30·61 and 18·01 per 1,000 respectively. The Sanitary Reports do not present any information worthy of record, except that typhoid fever, attended with many fatal results, occurred among the European soldiers in the Dinapore Cantonment.

124. In the *Gya* district also the sickness and mortality were comparatively less. 50 against 53 per cent. in 1882 of the villages were affected, and the mortality amounted to 30,465, or at 14·33 per 1,000 of population, against 31,180 deaths or at 14·67 per 1,000. August to November were the most unhealthy months, and the Sherghati thanah and the urban and rural areas of Gya returned the highest death-rates, viz. 22, 19·66 and 18·68 per 1,000 of population respectively. The local reports do not record any noteworthy information.

125. The *Shahabad* district exhibited, in contrast with 1882, a small reduction in the prevalence, but a very marked diminution in the fatality of the disease, as will be seen from the following figures. Percentage of villages

attacked 72 against 78; deaths 24,890 against 36,643;* and death-rate per 1,000 of population 12·66 against 18·64. No area suffered exceptionally. This comparative immunity from the disease is ascribed to the great dryness of the climate of the year, caused by a very deficient rainfall. The malady proved most fatal during the third and fourth quarters of the year, that is during the seasons of moisture and evaporation, showing that the fevers are chiefly malarial But it was observed that autumnal fevers did not assume the frequency and severity which characterized them in former years.

126. In the *Mozufferpore* district 21,535 deaths, being in the proportion of 8·34 per 1,000 of population, were recorded in 62 per cent. of the villages, against 25,601 deaths, or at 9·91 per 1,000, in 59 per cent. of the villages in 1882, indicating an increase in the area of disease accompanied by a decrease in mortality. The returns do not show that any circle suffered with exceptional severity, but the Magistrate during his tour found that the fever was very widespread and had a very disabling effect on the people. In its severe form he found it prevalent in the Midnapore and Chundrahatti outposts in the Sudder sub-division. These places have the unenviable reputation of being the most unhealthy localities in the district, and they suffered most after the subsidence of the inundation in August, of the Little Gunduck, Baghmati and Adhwaria rivers, which rose to heights previously unknown, and kept the whole country submerged for fully three weeks, leaving behind a large deposit of decaying vegetation. Another reason advanced by the Magistrate as to why the fever was so severely prevalent in the district is unseasonable rainfall and variations of temperature. The rainfall of June was heavy (20·09 inches), and was succeeded by an intense heat and followed by heavy rain in July and August (10·07 and 11·75 inches respectively) and an almost entire cessation in September. The injured crops remained on the ground and rotted, and the heat was constant throughout September and October, when there ought to have been rain and comparatively cool weather. The Civil Surgeon again refers to the subject of inundations having, according to popular belief, a prejudicial effect on the public health, which he considered an open question, *vide* last annual Report. In making the following observations he evidently refers to the cyclonic vortex which passed over the district in June, accompanied by a heavy rainfall on the 16th and 17th of that month, particularly at head-quarters and in the south of the district, and not to the August inundation mentioned by the Magistrate. This flooding in June drained off quickly everywhere, except from low lands. He says, inundations annually occur towards the end of the rainy season, but during the year under notice it took place so early as in June, when 20·09 inches of rain were registered against 5·98 in the same month in 1882, and a vast extent of country comprising the southern portion of the district, including the town of Hajipore and the Lalgunge and Mahua thanahs, was submerged, and in this area the fever prevailed most, in fact, according to general opinion, epidemically. Moreover, the inundation left in many places as it subsided a large deposit of silt and decomposing vegetable matter; and to this circumstance was superadded an almost entire absence of rain, September registering only 4 and October ·03 inches, during which the powerful heat no doubt caused exhalations from the deposits left by the receding waters, which proved detrimental to the public health.

127. In the *Durbhanga* district the disease prevailed somewhat more extensively and fatally than in the preceding year. Thirty-six against 32 per cent. of the villages were covered by the disease, and 26,496 persons, or at the rate of 10·06 per 1,000, died, against 26,167 or at 9·93 per 1,000. October to November were the worst months, but no circle exhibited exceptional suffering. Nevertheless, the Magistrate states that, the disease was present in fatal form at the close of the rainy season in Tajpore and Dulsinghsarai in the Tajpore sub-division, gradually spread throughout the whole sub-division, and extended to the eastern portion of the Sudder and to a part of the Madhubani sub-division. This outbreak is referred by him chiefly to alternations in climate, the cold weather having set in very early, the mornings and evenings being very cold and the days very hot. The Civil Surgeon observes that "fever in

* The figures of 1882 include the 12,430 deaths which had been omitted from the returns, but supplied afterwards, for reasons explained in the annual Report for that year.

this district is attributed to the generally low level of the country and to the yearly occurrence of inundations which leave large marshy tracts which never dry up."

128. *Sarun.*—The distribution of fever in this district was somewhat wider and the mortality higher than in 1882, 49 against 45 per cent. of the villages having been affected by the disease, and the mortality amounting to 13,459 deaths, or in the proportion per 1,000 of population of 5·90, against 11,832 deaths or at 5·18 per 1,000. The months of September to December were more unhealthy than the other months, but the mortality was noticeably high nowhere. The greater prevalence of fever this year is ascribed by the Civil Surgeon, Dr. Russell, to "irrigation and the greater difficulty experienced in draining the country owing to the Railway now forming a bund across it."

129. *Chumparun.*—Compared with 1882, the fever in this district was somewhat more prevalent, but the mortality was considerably higher, the deaths of 18,559 persons, or at the rate of 10·78 per 1,000, having been recorded in 31 per cent. of the villages, against 12,093 deaths, or at 7·02 per 1,000, in 26 per cent. of the villages. The disease is said to have prevailed most "when there was no rain," during February, March and December, and during the "three months after the heaviest rainfall of the year"—September to November. Although no area presented a high mortality, the notoriously unhealthy thanahs of Bagaha and Louria, lying between the Himalayas and the river Gunduck, were most affected.

130. In the *Monghyr* district 16,352 deaths were recorded in 35 per cent. of the villages, being in the proportion of 8·30 per 1,000 of population, against 20,730 deaths in 36 per cent. of the villages, or at 10·52 per 1,000 in 1882, denoting a decline in both sickness and mortality, the latter to a considerable extent. The severity of the disease was felt most during October to December, and the Jamalpore thanah and Shekpura town again presented the highest death-rates, viz. 23·79 and 19·57, per 1,000 of population. The Sanitary Reports contain no information of interest regarding the prevalent fever, excepting that the Beguserai and Gogri thanahs suffered severely as they did in former years. It was reported last year that the Gogri thanah had become more exposed to fever attacks since the Koosee river altered its course.

131. *Bhagulpore.*—In this district 28,090 deaths, or at the rate of 14·28 per 1,000 of population, were reported from 41 per cent. of the villages, against 25,956 deaths, or at 13·20 per 1,000, from the same percentage of villages, in the preceding year, indicating a higher mortality without any greater extension of the disease. The months of severest suffering were January, April, November and December, and all the villages in the Kissengunge, Bhagulpore, Bihipore, Banka, Madehpur and Supul thanahs were pervaded by the disease. The great unhealthiness of Kissengunge, in which, however, the disease was not very fatal, as well as of Pertabgunge thanah, which recorded a death-rate of 17·29 per 1,000 of population, is attributed by the Magistrate to the inundation of the Koosee river. The Civil Surgeon notes that the early closing of the rains caused a considerable decrease of fever in Madehpur, but this is one of the thanahs all the villages of which were overrun by the disease.

132. In the *Purneah* district the percentage of villages attacked was 61 against 59, and the casualties amounted to 30,340, being in the proportion of 16·41 per 1,000 of population, against 30,225, or at 16·34 per 1,000 in 1882, indicating that the disease prevailed in a somewhat enlarged area and with a slightly increased severity. November was the only month in which the disease exhibited marked activity, and the marginally noted areas returned the largest proportions of deaths. Every village in the Bularampore, Kadwa, Kissengunge and Amur Kasba thanahs, as well as in thanahs Purneah, Gondwara and Arrarea in which the mortality was not conspicuously great, was pervaded by the disease. Beyond the statement by the Civil Surgeon, that "even when there is less rain, less saturation and less evaporation, increased cold and great difference of temperature during the

	Ratio per *mille*		Ratio per *mille*.
Purneah town ...	27·83	Kadwa thanah...	18·85
Bularampore thanah	24·30	Kissengunge „ ...	18·40
Ranigunge „ ...	20·20	Amur Kasba ...	18·17

day and night will induce fever," the local Reports do not furnish any information of interest.

133. The statistics of the *Maldah* district indicate that, in comparison with 1882, there was a marked extension in the area of disease associated with a large decrease of mortality, thus: percentage of villages affected, 79 against 63; deaths 11,176 against 12,949; death-rate 15·73 per 1,000 of population, against 18·22 per 1,000. The fever of 1883 was a continuation of that which prevailed in 1882. It was severe in January affecting principally the Maldah, Ratua and Kharba thanahs. It died out at the end of this month, but broke out afresh and rather virulently in April, spread all over the district, and continued to prevail to the end of the year, but displayed greatest activity in October, November and December. On the whole, however, the suffering was greatest in the Maldah and Gojol thanahs, which presented death-rates amounting to 21·31 and 19·80 per 1,000 of population respectively. Every village in the Maldah thanah was attacked. Referring to the excessive prevalence of the disease, the Magistrate writes:—"This was due not to the great scarcity of food which was much felt, but, probably, to the general stagnation of water consequent upon deficient rainfall and want of high floods to replenish and freshen the ordinary sources of water-supply. The gradual deterioration of the rivers and, apparently, of the general water-supply in the part of the country east of the Ganges is a very serious drawback to the prosperity and health of the residents of the district. Since the high inundation of 1879, year after year the country has suffered from insufficiency of moisture. Latterly, owing to the failure of rain, the ryots used much of their ordinary water-supply for irrigating their rice crops. The want of water for domestic purposes—in fact water famine—is a consequence much felt over wide areas in the Bhurind tract away from the river." The Civil Surgeon, alluding to the same subject, the causation of the fever, very pointedly remarks that "groups of people congregated thickly together in villages surrounded by soil sodden and saturated by the excremental discharges of years, little or no ventilation, air poisoned by the miasmatic exhalations of decaying animal and vegetable debris, and water rendered impure by nature and art, are all quite sufficient to account for the spread, if not the origin, of disease in an Indian village."

The districts of Maldah and Purneah belong more properly for geographical position and climate to Bengal, but are under the administration of the Commissioner of Bhagulpore.

134. In the *Sonthal Pergunnahs*, while the disease prevailed less diffusely, the mortality was considerably higher, as compared with 1882. The percentage of villages affected was 39 against 48, and the deaths amounted to 17,179, or at 10·95 per 1,000 of population, against 13,974, or at 8·91 per 1,000. No area presented exceptional mortality. The severity of the disease, such as it was, commenced to be felt in March with the advent of the hot weather; by May it spread all over the district; and during July, August and September it attained maximum intensity and was most fatal. In October there was a decrease, which was more decided in November and December. It is said to have prevailed extensively in the western half of the district embracing the subdivision of Deoghur, Godda and part of Dumka. This part of the district is high, consisting of low hills, undulating lands, and basaltic rocks, and laterite; but the eastern half, containing the sub-divisions of Pakour and Rajmehal, which is chiefly alluvial, and contains much low land, and which had hitherto suffered more from malarial fever, was comparatively healthy this year. This immunity is ascribed to the scarcity of rainfall and the absence of flooding of the river Ganges. Referring to the type of the fever, the Civil Surgeon, Dr. Barker, writes:—"There is no doubt that this fever, which is similar in all its features to what is called the Burdwan fever, is steadily increasing, and the great mortality proves it is more severe and widespread than it was some years since; but owing to the physical characteristics of the country, it is not likely to gain the same ascendancy here as it did in Lower Bengal, if we are to believe in its malarious origin and the factors necessary to produce that subtle poisons—*malaria*." In the town of Dumka the disease did not prevail severely, and the fatal remittent type of the disease which was present in 1882 was almost entirely absent this year.

ORISSA.

135. As in the preceding year, fever prevailed least in this division of the Province, but in relative incidence, the mortality had abated but little. The recorded deaths amounted in a population enumerated at 3,628,832 to 24,672 against 25,030, and the death-rate to 6·79 against 7·01 per 1,000 in 1882. In seasonal activity December, November, October and January took the lead of the other months in the order noted.

136. The fever statistics of the three districts composing this division may be considered together, as the mortality which occurred in them was not very great, no area presenting a noticeably high death-rate. The local Reports present nothing important connected with the fevers which prevailed, except that the Civil Surgeon of *Cuttack* observes that ordinary intermittents and remittents occur chiefly in the low localities towards the Coast and in the hilly tracts on the western side of the district; and the Magistrate of *Balasore* fears that the fever in his district is identical with the Burdwan fever, which, having invaded Midnapore, first appeared in Jelasore, and, having slowly descended southwards through Basta and Baliapal, is now near the Balasore town. The figures of these districts are given below:—

	Percentage of villages affected.		Deaths.		Ratio per mille.	
	1883.	1882.	1883.	1882.	1883.	1882.
Cuttack	37	34	12,806	12,471	7·13	7·17
Poori	46	32	4,443	5,082	5·00	5·71
Balasore	42	43	7,423	7,477	7·85	7·90

The comparison of the results of 1883 with those of 1882 discloses no marked variation in both sickness and mortality, excepting that in Poori a larger area was affected by the disease. On the whole, however, there was a little abatement of mortality in all the districts. It should, however, be mentioned that in Cuttack a new area, Banka, was brought under registration during the year under review, for which no records exist for the preceding year. This accounts for the deaths being numerically greater and the proportion of mortality to population being less, as exhibited in the above table.

CHOTA NAGPORE.

137. The prevalence and fatality of fever in this division of the Province were not excessive. The number of deaths reported to have occurred in it was 51,289, or in the proportion of 11·83 per 1,000, among a population numerically returned at 4,334,178, as opposed to 54,158 deaths or at 12·49 per 1,000 in 1882, indicating a small reduction of mortality. The disease commenced to be active in April, and continued to do so till September, in which month it reached maximum severity. In October it prevailed almost as severely as in September, but in November and December it exhibited a decline.

138. The figures representing the sickness and mortality in the four districts which form this division are noted below:—

	Percentage of villages attacked.		Deaths.		Ratio per mille.	
	1883.	1882.	1883.	1882.	1883.	1882.
Hazaribagh	67	60	15,172	14,175	13·73	12·83
Lohardugga	47	43	20,253	21,820	12·58	13·65
Singbhum	63	70	5,595	6,112	9·95	10·87
Manbhum	55	53	10,269	12,051	9·70	11·38

These figures indicate that in *Hazaribagh* both the sickness and mortality had increased, while in *Singbhum* the contrary was the case; and that in Lohardugga and Manbhum an expansion of the area of disease was associated with a decline in mortality, notably in the latter district. Turning to the returns of the circles in these districts, it is seen that in only those named in the margin the mortality was high. No information possessing any special interest is contained in the Sanitary Reports received from these districts.

In Hazaribagh.	Ratio per mille.
Simoria thanah ...	24·84
Huntergunge „ ...	21·40
Hazaribagh „ ...	16·73
In Lohardugga.	
Munkah thanah ...	20·30

In Hazaribagh.	Ratio per mille.
Tandowa thanah ...	16·40
Chatra „ ...	16·26
In Manbhum.	
Toondi thanah ...	20·03

139. **Fever in the Port of Calcutta.** The mortality from fever among the European seamen in the *Port of Calcutta* was inconsiderable. Of malarious fevers there were 323 admissions into hospital, attended with four deaths, giving a death-rate of 2·15 per 1,000 of population according to the estimate of the Health Officer of the Port, as opposed to 251 admissions and five deaths, or at the rate of 2·79 per 1,000, in 1882, indicating an extension of sickness associated with a decline in mortality. Of simple fever 114 against 186 were admitted into hospital, but in both years this class of fevers produced no fatal result. It is gratifying to record that enteric fever, which occurred fatally among the European seamen every year since 1878, was absent from the Port this year.

Among European Seamen.

140. The recorded mortality from fevers among the native floating population indicates a decline in mortality, as there appears to have occurred among them eight deaths from malarious fever, or at the rate of ·31 per 1,000, against 26 deaths, or at 1·12 per 1,000 in the preceding year, and 14 deaths from simple fever, or at ·55 per 1,000, against no deaths in 1882.

Among the Native Floating Population.

BOWEL-COMPLAINTS.

141. Reasons have been submitted in the Reports of former years, showing that there is no doubt that the mortality from bowel-complaints has always been enormously under-registered. The year under review forms no exception to this rule. Its records, as they stand, show that 55,270 deaths, or in the proportion of ·83 per 1,000 of population, occurred from this class of diseases in 9 per cent. of the total villages in the Province, the figures of the preceding year being deaths 61,362, death-rate ·92 per 1,000, and percentage of villages affected 10; and that in 11 against 16 of the registering circles, the maladies prevailed with some severity; in 619 against 607 they exhibited no abnormal intensity; and from 18 against 21 they were absent. These figures indicate that the diseases were less diffused, and that the mortality had at the same time abated. The contributions towards the total casualties of the year from the urban and rural circles were 8,760 deaths, or at 3·54 per 1,000 of population by the former, and 46,510 deaths, or at ·73 per 1,000, by the latter.

Extent of prevalence and fatality of Bowel-complaints.

142. This information is shown below in columns according to districts, towns and rural circles:—

Areas which suffered most from Bowel-complaints.

Districts.	Ratio per mille.	Towns.	Ratio per mille.	Rural Circles.	Ratio per mille.
Balasore	5·28	Revilgunge ...	8·08	Basta in Balasore ...	11·08
Howrah	3·85	Poori	7·24	Dinapore in Patna ...	8·44
Poori	2·58	Patna	7·11	Balasore ...	7·01
Patna	2·20	Midnapore ...	6·82	Dighwara in Sarun ...	6·70
Hughli	2·08	Suburbs of Calcutta ...	6·74	Basudevpur in Balasore	6·18
		Durbhanga ...	6·65		

143. The marginal figures, indicating the seasonal incidence of bowel-complaints, again denote that the morning and evening damps and chills and great alternations of temperature of July, August and September, and the extreme cold night air and heavy dews of January, November and December cause large numbers of the poor, insufficiently clad, and poorly fed portion of the population to succumb to the influence of these maladies. To these causes may be added errors of diet, bad water, and malaria as aids to the propagation of the diseases.

Seasonal incidence of bowel-complaints.

	Deaths.		Deaths.
December ...	5,578	April ...	4,552
August ...	5,173	October ...	4,446
January ...	5,123	May ...	4,221
November ...	4,863	February ...	4,084
September ...	4,787	March ...	4,056
July ...	4,574	June ...	3,814

144. The table in the margin indicates that while, on the one hand, diarrhœa prevailed to a greater extent among the European seamen than during the preceding year, and was associated with no deaths, dysentery, on the other hand, attacked a smaller number, and was

Diarrhœa and Dysentery in the Port of Calcutta.

	Cases. 1883.	Cases. 1882.	Deaths. 1883.	Deaths. 1882.	Ratio per mille. 1883.	Ratio per mille. 1882.
Diarrhœa ...	164	143	...	2	...	1·11
Dysentery ...	90	146	4	8	2·15	4·46

attended with four deaths, representing about half the mortality of 1882. The casaulty-rate among the native floating population from those diseases was, although higher than in the preceding year, still low, viz. ·07 per 1,000 of population from diarrhœa and ·47 per 1,000 from dysentery.

INJURY.

Mortality from Injury.

145. The casualties from injury amounted during the year under review to 23,670, or in the proportion per 1,000 of population of ·35, in opposition to 21,611 deaths, or at the rate of ·32 per 1,000 in the preceding year, indicating that there was an increase in the fatal results from this death-cause to the extent of 2,059. The urban circles returned only 4 per cent. of the total deaths from injury, against 96 per cent. in the rural circles, showing that the rural population are, for obvious reasons, more exposed to death from violence than the urban population.

Mortality from the different classes of Injury.

	Suicide.				Wounds.		Accident.		Snake-bite and killed by wild beasts.	
	Deaths.			Ratio per cent. to total deaths from Injury.	Deaths.	Ratio per cent. to total deaths from Injury.	Deaths.	Ratio per cent. to total deaths from Injury.	Deaths.	Ratio per cent. to total deaths from Injury.
	Male.	Female.	Total.							
In 1883	928	1,544	2,472	10·44	1,513	6·39	9,614	40·61	10,071	42·54
In 1878-82 ...	922	1,484	2,406	10·89	1,208	5·87	8,644	38·68	9,837	44·54

146. The comparison instituted in this table again indicates that the largest proportion of deaths from violence is caused by snakes and wild beasts; that accidents furnish the next highest mortality; that suicide follows accidents, the largest proportion of deaths from this cause being furnished by women; and that wounds cause the least number of deaths.

Seasonal incidence of death from Violence.

147. The greatest loss to life from violence occurred during the rainy months from June to September. During this period 13,475 deaths, representing nearly 57 per cent. of the total casualties of the year, were recorded. This recurs year by year from causes explained in former Reports.

OTHER DISEASES.

Mortality from Other Diseases.

148. The registered casualties from the diseases which have not been considered in the foregoing portion of this Report, and which are classed under the above-mentioned head, amounted to 152,817, *i. e.*, in the proportion of 2·30 per 1,000 of population against 140,732 deaths, or at 2·12 per 1,000 in the preceding year, showing an increase of mortality to the extent of 12,085 deaths. The areas which bore the severest suffering from these diseases are those named below :—

Districts.	Ratio per *mille*.
Poori ..	.. 10·09
Sarun ...	... 6·58
Backergunge	... 5·64
Balasore ...	... 5·50
Patna ..	.. 4·84
Cuttack ..	... 4·27

Towns.	Ratio per *mille*.
Poori ...	... 17·12
Dacca ...	.. 12·18
Suburbs of Calcutta	... 10·82
Gya ...	.. 10·70
Bhagulpore ..	. 10·28
Kendrapara ..	. 10·25
Bankura ...	.. 9·70
Jaipore ...	... 9·08
Burdwan .	.. 8·97
Uterpara ...	... 8·71
Patna ..	... 8·28
Bishenpore ..	.. 8·26
Sitamurhi ...	... 8·16
Behar ...	... 7·94
Sewan ...	.. 7·81
Kishnaghur ...	... 7·46
Kishorgunge	. 7·45
Balasore ...	... 7·10
Arrah ...	... 7·04
Mokameh ...	... 6·92

Rural Circles.	Ratio per *mille*.
Bhanpur, in Poori	.. 18·43
Khurda, in Poori	... 11·58
Karimpore, in Nuddea	. 10·06
Matharia, in Backergunge .	9·33
Dinapore, in Patna .	. 9·22
Poori ..	. 9·19
Gopalgunge, in Sarun	. . 8·54
Bauphal, in Backergunge	8·35
Baragaon, in Sarun .	8·15
Gop, in Poori .	8·12
Tehatta, in Nuddea .	7·92
Balasore	7·84
Aul, in Cuttack .	7·72
Gulachipa, in Backergunge	7·70
Mokameh, in Patna ...	7·64
Perozpore, in Backergunge	7·42
Pipli, in Poori	7·38
Dighwara, in Sarun .	7·25
Futuha, in Patna .	7·15
Parsa, in Sarun ..	7·14
Basta, in Balasore .	6·98
Bhandaria, in Backergunge	6·91

149. **Port of Calcutta** —From this cause three out of four cases died in hospital, or in the proportion of 1·61 per 1,000 of average strength, and two out of hospital. In the preceding year the admissions into hospital amounted to 5, the deaths to the same number as in this year, and the death-rate to 1·67 per 1,000. Two of the casualties of the year occurred on boardship; but there is no reason to believe that the instructions issued by the Port Commissioners for the protection of crews during the hot season were not complied with in any of the cases.

Mortality from Heat Apoplexy.

150. There was a considerable reduction in the number of admissions into hospital from scurvy, the diminution amounting to half the admissions of the preceding year, viz. 14 as against 28. Happily, as in 1882, none of these cases terminated in death. They were present on board of seven vessels, and, on enquiry, no cause favouring the disease was found to exist in any of them, excepting in one. This vessel, it appears, left the West Indies without taking a fresh supply of lime juice, and the result was that the existing stock having failed during the voyage the disease appeared among the crew.

Prevalence and mortality from Scurvy.

151. One thousand one hundred and sixty-nine European seamen against 1,426 during the preceding year were admitted into hospital from diseases classed under the head of "other causes," and of this number 33 died, being in the proportion of 17·74 per 1,000 of average strength against 29 deaths, or at 16·18 per 1,000, indicating a sensible reduction in sickness associated with a rise in mortality. These figures are exclusive of 7 casualties from these causes which occurred out of hospital against 4 in 1882. Of the 33 deaths in hospital, 15 were caused by diseases not referable to climatic or local conditions, viz. 12 from phthisis, 2 from heart disease, and 1 from aneurism. The remaining 18 died from such diseases as pneumonia, pleurisy, hepatitis, cerebral conjestion and drowning. The casualties out of hospital were traced in one case to accident and in the rest to drowning. Of the native floating population 24 died from the diseases discussed in this paragraph, being at the rate of ·94 per 1,000 of population. This mortality is lower than that of 1882, during which 36 died, or at the rate of 1·41 per 1,000.

Mortality from "Other Causes."

SECTION VII.

GENERAL HISTORY OF VACCINATION.

Year of Report.

152. The history of vaccination considered in this section is for the official year 1883-84.

Officers in charge of the Circles.

153. During this year the following officers held charge of the circles in which vaccine operations are carried on :—

Calcutta.—Surgeon-Major K. McLeod, throughout the year.

Metropolitan Circles, including *the Suburbs of Calcutta.*—Surgeon-Major K. P. Gupta, throughout the year.

Darjiling Circle.—Surgeon-Major J. J. Wood, throughout the year.

Ranchi Circle.—Surgeon W. Owen, throughout the year.

Sonthal Pergunnahs Circle.—Dr. R. A. Barker, throughout the year.

Eastern Bengal Circle.—Apothecary A. Lyons, throughout the year.

Behar Circle.—Assistant Surgeon Mothura Nath Sen, throughout the year.

Orissa Circle.—Assistant Apothecary P. Veariah Naidu, throughout the year.

154. *Strength of the Working Establishment.*

Circles.	In 1883-84.								In 1882-83.							
	Superintendents.	Deputy Superintendents.	Native Superintendents.	Inspectors.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.	Superintendents.	Deputy Superintendents.	Native Superintendents.	Inspectors.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.
Calcutta	1	1	...	...	3	11	...	...	1	1	...	...	3	16	...	...
Metropolitan Circles	1	4	..	39	...	..	...	342	1	4	...	39	...	...	...	306
Suburbs of Calcutta	..	1	...	...	3	10	..	...	...	1	...	...	3	10	...	...
TOTAL OF METROPOLITAN CIRCLES	1	5	...	39	3	10	...	342	1	5	...	39	8	10	...	306
Darjiling Circle	1	2	...	11	1	5	...	184	1	2	7	7	1	48	39	165
Ranchi Circle	1	1	2	4	1	39	...	183	1	1	3	4	...	39	...	146
Southal Pergunnahs Circle ...	1	1	...	10	3	59	...	59	1	1	.	10	3	59	..	59
Eastern Bengal Circle ...	1	1	1	3	6	77	37	184	1	1	...	2	6	48	23	149
Orissa Circle	1	...	...	...	3	23	3	...	1	...	...	...	3	27	3	..
Behar Circle	1	...	2	..	4	41	17	...	1	...	.	...	5	27	3	.
TOTAL OF VACCINATION CIRCLES	8	11	5	67	24	268	57	952	8	11	10	62	24	272	67	825
Municipalities, Dispensaries, &c.	...	...	..	...	..	224	...	...	...	.		.	...	123	...	..
GRAND TOTAL ..	8	11	5	67	24	492	57	952	8	11	10	62	24	395	67	825

Several modifications of the working establishment took place during the year, involving, on the whole, an increase of five inspectors and 127 licensed vaccinators, and a decrease of five native superintendents, four Government vaccinators, and 10 apprentices; but in no case was the sanctioned establishment exceeded. These changes were due to the following causes: In the *Darjiling* Circle, the major portion of the paid subordinate establishment being no longer required, owing, as reported last year, to the extension of the licensed system of vaccination to the entire circle except its hill portion, there was a reduction of seven native superintendents, 41 vaccinators and 39 apprentices. Of the native superintendents four were made inspectors in this circle, (whereby effect was given to the orders of Government sanctioning the inspectors who were required for the supervision of operations under the licensed system of vaccination), and one was transferred to the *Eastern Bengal* and one to the *Behar* Circle. Of the vaccinators and apprentices, 27 of the former and 15 of the latter were transferred to the *Eastern Bengal* Circle, and 14 of the former and 14 of the latter to the *Behar* Circle, thus increasing the staff of native superintendents, vaccinators, and apprentices in these circles. It is not stated how the remaining 10 apprentices were disposed of. It is possible that they were licensed to practise vaccination. From the *Ranchi* Circle one native superintendent was transferred to *Behar*, and a head vaccinator was received in his place from the latter Circle, and this accounts for the changes in the strength of these officers indicated against these two Circles. The further change of establishment in the *Eastern Bengal* Circle is an increase of one inspector. This was brought about in the following manner. An Assistant Surgeon was appointed in the room of the Deputy Superintendent who was formerly an inspector, as it was considered that the important and responsible post of Deputy Superintendent should be held by a class of officers superior to that of vaccinators. The ex-inspector reverted to his former post. The increase of 127 licensed vaccinators was due to the *Metropolitan* Circles having employed 36 additional men, *Darjiling* 19, *Ranchi* 37 and *Eastern Bengal* 35, the requirements of the year necessitating these additions.

Irrespective of the above changes, two Deputy Superintendents in the Metropolitan Circles—Assistant Surgeons Ram Soonder Ghose, Rai Bahadoor, and Buddynath Brummo—retired on superannuation pensions. Assistant Surgeon Neem Chand Gupta, who was in charge of the Suburbs of Calcutta, was promoted to one of the vacancies, and the other was filled up by Assistant Surgeon Kashi Chunder Dutt. The appointment of Assistant Surgeon Neem Chand Gupta was given to Assistant Surgeon Priumbur Nath Mitter. In the Darjiling Circle also a retirement on pension took place, viz., of inspector W. C. Mukerjee, and his place was given to a native superintendent. Death

removed one native superintendent from the Ranchi Circle and one inspector from the Darjiling Circle.

Conduct of Establishment.

155. The conduct of the Vaccination Department establishment during the year was, on the whole, good, excepting in the Ranchi Circle, where the Superintendent is doing his best under many disadvantages to bring about a better state of discipline; and in the Sonthal Pergunnahs Circle, where the men generally are reported not to have behaved so satisfactorily as in former years, resulting in a large number of them having been punished for various offences. Those of the establishment who were reported to be deserving of special commendation were: In the *Darjiling* Circle, Deputy Superintendent Tajumul Hossein, who maintained during the year the zeal, energy and tact which characterized his work in former years. In the *Eastern Bengal* Circle, Inspector Abdul Hamid, who displayed similar good conduct. In the *Ranchi* Circle, Inspector Allimuddin, who supervised the staff under him with noticeable tact; Vaccinator Luchman Sahi, who performed his work willingly and cheerfully, and exhibited untiring energy in assisting the Superintendent in inspection work; and Inspector Aughor Nath Sircar, who successfully introduced bovine vaccination in the circle, displayed steady perseverance in overcoming the prejudices of the people against the measure, and procured calves for the extension of the work. The Superintendent recommends the last named officer for promotion. On the other hand, several officers were punished for grave misconduct. In the *Ranchi* Circle a large number of vaccinators were punished for breaches of discipline and neglect of duty. In the *Sonthal Pergunnahs* Circle the case of Assistant Surgeon Probodhe Chunder Bose, the Deputy Superintendent, has already been submitted to Government for consideration. It is to be regretted that this officer, who has hitherto always been reported to have performed his duties with commendable energy, zeal and tact, should have failed to maintain this character during the past two years. Two inspectors were fined for making false entries in their registers. A vaccinator was dismissed for falsifying his register and receiving illegal gratification. Another was suspected of the latter offence, and his case is being enquired into. In the *Eastern Bengal* Circle one vaccinator was dismissed for soliciting gratuities from vaccinifers and their guardians, three for refusing to proceed to Noakhalli to suppress an outbreak of small-pox which occurred there, and one for delaying to join his post after expiry of leave. In addition seven vaccinators and four apprentices did not rejoin their appointments after expiry of leave, five vaccinators and five apprentices absconded, and four vaccinators and one apprentice resigned. These men mostly belonged to the batch who had been transferred from Darjiling; and the cause of their not returning to duty appeared to be that they did not appreciate working far away from their homes, and that the cost of living in Dacca during the recess was higher than their recess pay, particularly in the cases of the apprentices. In the *Orissa* Circle two vaccinators were dismissed, one for not returning to duty at the beginning of the season, and the other for absence without leave.

Areas vaccinated and plans which determined the conduct of Operations.

156. A summary of the information under this head is subjoined. Fuller details regarding the exact areas taken up for operations will be found in statement No. A, Appendix VI to this Report.

In the Vaccination Circles.

157. In *Calcutta* vaccination was carried on, as in the preceding year, under the provisions of the Compulsory Vaccination Act, an account of the working of which is furnished in a subsequent paragraph of this section. It will be sufficient here to state that the work was confined within the limits of the metropolis; that it was accomplished by 11 vaccinators under three head vaccinators, supervised by the Deputy Superintendent; that 9,538 persons or at 1·96 per cent. of the population were protected; and that during the recess 1,342 operations, included in the above number were undertaken to keep up a supply of lymph, to vaccinate children whose parents or guardians had neglected to have them vaccinated within the period fixed by law, and to protect the unvaccinated in the neighbourhood of localities where small-pox had broken out.

In the *Metropolitan* Circles the entire area composing it was taken up for operations, and the executive and supervising staff judiciously distributed

over it. The results of this arrangement in each division and district are subjoined:—

Burdwan Division.	Number of vacci-nators.	Number of operations.	Percentage of population protected.	*Presidency Division.*	Number of vacci-nators.	Number of operations.	Percentage of population protected.
Burdwan ...	37	34,308	2·57	24-Pergunnahs ...	26	37,268	2·58
Bankura ...	34	20,865	2·15	Nuddea ...	39	50,596	3·89
Birbhum ...	20	15,582	1·98	Jessore ...	41	39,073	2·06
Midnapore ...	44	31,648	1·38	Khulna ...	34	29,580	2·73
Hughli and Serampore	25	19,353	2·23	Murshidabad ...	31	46,661	4·21
Howrah ...	11	17,609	3·32	Total ...	171	203,178	2·98
Total ...	171	139,365	2·05				

During the recess 1,552 operations were performed at Jelinghi and Bhartpore in Murshidabad, at Karimpore in Nuddea and at Sakulipore in Birbhum. In the *Suburbs* of *Calcutta*, which forms a part of the Metropolitan Circles, 14,397 operations were performed, of which 4,367 were re-vaccinations, the work being pursued under the provisions of the Compulsory Vaccination Act and conducted by 10 vaccinators under 3 head vaccinators, supervised by a Deputy Superintendent. The manner in which this law was worked in this area is shown in a subsequent paragraph of this section.

In the *Darjiling* Circle the operations of the *Government agency*, consisting of five vaccinators under a head vaccinator and supervised by the Superintendent, were limited to the Hill portion of the Darjiling district, composed of the Kalimpong sub-division and thanahs Darjiling and Kurseong. In this area, which is irregularly populated and difficult to work in, owing to the situation of the localities embraced by it varying from a few hundred to nearly 10,000 feet above the level of the sea, with rivers and torrents which are impassable for days in the rainy season, 14,142 operations were performed against 5,435 in the preceding year. There was no work carried on during the recess. The head vaccinator above mentioned also inspected the Darjiling municipal vaccinations, an arrangement which is said to have promoted the protection of the bazars in Darjiling and Jore Bungalow. The *Licensed* vaccinating staff, consisting of 184 vaccinators under 11 Government Inspectors, supervised by two Deputy Superintendents, was distributed over the remaining area of this circle embraced by the districts of Rajshahye, Rungpore, Dinagepore, Bogra, Julpaiguri, Purneah, Maldah, and the Terai sub-division of Darjiling, where a total of 207,394 operations were performed, including 5,731 vaccinations undertaken during the recess by 28 of the vaccinators in Bogra, Rungpore, Dinagepore, the Terai, Julpaiguri and Maldah—in the two last named districts on the appearance of small-pox. The Government Cinchona Garden was also protected.

In the *Ranchi* Circle, where operations were commenced somewhat late in the season owing to the non-arrival of the vaccinators after expiry of leave, the *Government* vaccinators (excluding 2 who were deputed to Singbhum, 1 to Manbhum, 1 to Hazaribagh, and 1 to the Tributary States of Gangpur and Jashpur, to supervise the licensed vaccinators carrying on operations in these areas) were divided into four batches, three of which were distributed over the Lohardugga district taking up the under-mentioned thanahs, and one over the Kolhan in Singbhum. One batch, consisting of nine vaccinators under an inspector, pursued operations in succession in thanahs Ranchi, Choria, Balumot, Lohardugga (all the villages lying to the west of the road running north and south), Biru and Burwya. They performed 9,017 vaccinations. The second batch, composed of nine vaccinators under an inspector, performed 10,536 operations in thanahs Ranchi, Lodhma, Tamar, Bassia and Torpa, which they took up in succession. A third batch of eight operators under a native superintendent commenced work in Kura outpost in thanah Lohardugga, after which they took up the eastern half of the same thanah and, in succession, thanahs Sisoi (late Korambi) and Palkot. This batch performed 11,546 operations. The fourth batch, consisting of eight vaccinators under a native superintendent, worked in the Kolhan in Singbhum. They commenced operations in Chyebassa, and continuing them in 16 groups of villages in succession, covering a large area, vaccinated 5,872 persons. Previous experience

having shown that the people in the Kolhan object to take vaccination from Mahomedan operators, preferring Brahmins who were residents of the place, arrangements were made whereby one Brahmin, four Kayasthas, one Kahar, who passed himself off as a Brahmin, and five Bengali apprentices were associated with the Mahomedan vaccinators. During the recess 1,757 operations were performed, viz., 1,611 in thanahs Palkot, Burwya, Sisoi in Lohardugga, included above, and 146 in Palamow and Bishenghur in Hazaribagh, in order to keep up a supply of lymph, and to meet outbreaks of small-pox. Many difficulties beset the carrying out of vaccination in almost all the above mentioned areas. They will be reported in a subsequent portion of this section. The scene of operations by the *Licensed* agency was Singbhum, (excluding the Kolhan and including Dalbhum) Manbhum and Hazaribagh, and the Tributary States of Sirguja, Udipur, Korea, Jashpur and Gangpur. A staff, consisting of 34 vaccinators under the supervision of two Government vaccinators, spread their operations during the working season throughout *Singbhum*, excepting, as before stated, the Kolhan which was under the Government vaccinators, resulting in the performance of 19,033 vaccinations, including 2,850 performed during the recess. In order to meet the prejudices of the people, above referred to, care was taken to select the operators, so that of them 26 were Tikait Brahmins chiefly from Manbhum, three were up-country men, and one a Mahomedan. In *Manbhum* vaccination was carried on in all its thanahs by 57 vaccinators under a head vaccinator and a vaccinator of the Government staff. The total work of the year amounted to 32,765 operations, of which 834 were performed during the recess in the Bagmundi and Govindpur thannahs owing to outbreaks of small-pox. In *Hazaribagh* 39 men were licensed to practise, and they carried on vaccinations under the supervision of one inspector and one Government vaccinator to the extent of 29,417 operations in thanahs Giridhi, Khurakdiha, Dumurhi, Kashmar, Jageswar, Bagodhar, Hazaribagh, Chorpa or Chowparun, Tandowa and Gowan, of which 1,176 were performed during the recess in Bishenghur, where small-pox had broken out severely. Much opposition to vaccination having been experienced in this district in former years, particularly when the operators were Government men, the Superintendent determined to try the effect of enrolling local men. He, therefore, obtained 37 Sindurias through the Deputy Commissioner, and granted them licenses. These men, as their designation implies, are sellers of sindur (vermilion) and other drugs. They had also followed the profession of inoculators. The result was that the people accepted vaccination from their hands more readily than they did from others, and the outturn of work was better than in the preceding year. It was found, however, that these men were very illiterate, and that it was hopeless to teach them to prepare the returns. This difficulty they, however, staved off by getting their friends to perform the writing for them; but to ensure matters, the Superintendent took from each of them an agreement binding them under a penalty of Rs. 25 to send in their returns punctually, to obey the orders of the inspector, to return the lancets at the close of the season, and not to charge more than two annas for each child operated on. The returns show that 2,751 operations were performed by licensed vaccinators during the recess in thanahs Ranchi and Lodhma in Lohardugga of which no account has been furnished in the Superintendent's report. With regard to the Tributary States, 17 Hindustani licensed vaccinators performed 9,257 operations in *Sirguja*; eight men (four Hindustanis and four Bengalis) performed 4,859 vaccinations in *Udipur*; six men worked in *Korea*, performing 3,134 operations. Ten vaccinators (eight Hindustanis and two Bengalis) operated on 3,022 persons in *Jashpur*; and 12 men returned 4,928 vaccinations from Gangpur. The operations in the three first named States were supervised by an inspector, and those in the two last by a vaccinator, both being Government officers.

In the *Sonthal Pergunnahs*, thanahs Kharakpur, Gogri, Beguserai, Monghyr, Jamui and Chakai in the Monghyr district, and thanahs Bhagulpore, Kolgong, Sultangunge, Bongong, Amarpur, Bihipur and Banka in the Bhagulpore district were taken up this year by the *Government* agency. In the Bhagulpore areas 18 vaccinators, under the supervision of the two inspectors and one head vaccinator, were employed, and they performed 3,865 operations in 137 villages—a very poor result, considering the strength of the staff which

produced it. To the Monghyr thanahs—which it should be mentioned, were taken up for the first time this year—were assigned the largest number of the vaccinators, viz., 41 under two inspectors and three head vaccinators, and the operations were carried on under the immediate supervision of the Deputy Superintendent. The vaccinations performed by this staff amounted to 36,752 in 1,521 villages, including 1,210 operations carried on during the recess for the suppression of small-pox and for keeping up the lymph supply. The *Licensed* agency undertook the vaccination of thanahs Moheshpur, Godda, Jamtara, Mudhupore, Sharat, Pakour, Deoghur including its municipal area, Poraya, Rajmehal, Bahawa, Shahebgunge including its town, Dumka and Mahagawn in the Sonthal Pergunnahs district, and thanahs Supul, Kissengunge and Madehpura in Bhagulpore. To the former area were allotted 56 vaccinators under three inspectors, who returned 64,862 operations in 2,366 villages; and to the latter, three vaccinators under one inspector, who performed 1,506 vaccinations in 56 villages. The recess work, necessited for the usual reasons, amounted to 4,834 operations. It will be noted that licensed vaccinators entered the Bhagulpore district for the first time this year.

In the *Eastern Bengal* Circle the *Government* and *Honorary* staff worked in thanahs Tipperah, Brahmanberia, Nobinnagar, Barakamta and Moradnagar in the Tipperah district, and Netrokona in Mymensing. Towards the end of the season some of the staff took up thanah Kasba in Tipperah, and outbreaks of small-pox necessitated the deputation of vaccinators to thanah Hajigunge in Tipperah, to thanahs Ramgunge, Begamgunge and Lakshimpur in Noakhalli, and to the Barisal town in Backergunge. The circle staff also undertook the vaccination of the Municipalities of Comillah, Brahmanberia and Dacca, in which they performed 747 operations. During the recess 484 operations were performed in the Dacca district for the maintenance of lymph and suppression of small-pox, and 350 in Tipperah for the latter purpose only. The statement in the margin exhibits the distribution of the establishment in the areas operated on and the results. The areas in the Tipperah district were for the first time entered upon during the year under review.

Districts.	Staff employed.				Number of operations.
	Superintendent.	Native Superintendent.	Head vaccinators.	Vaccinators and apprentices.	
Noakhalli	1	1	...	39	35,160
Backergunge	...	......	...	8	5,367
Mymensing	...	......	1	10	9,700
Tipperah	...	......	5	62	144,781
Dacca	...	......	...	......	484

To the *Licensed* agency were assigned the districts of Dacca, Faridpore and Pubna, and the thanahs of Tangail, Gopalpur, Pingna, Jamalpur, Dewangunge, Bazitpore, and Gaffargaon in Mymensing. It also took up the vaccination of the municipal areas of Faridpore, Goalundo, Dacca, Pubna and Serajgunge, and during the recess, with the view of arresting the spread of small-pox, some localities in the Dacca, Faridpore and Backergunge districts. The total number of vaccinations amounted in the former area to 2,604, and in the latter to 2,233. The marginal table exhibits the strength of the staff employed in the above mentioned areas, and the outturn of the work performed in them.

Areas.	Number of licensed vaccinators.	Number of operations performed.
Dacca ...	66	39,590
Pubna ...	32	39,754
Faridpore ...	45	26,181
Mymensing ...	41	49,672
Backergunge ...	(Recess)	27

In the *Orissa* Circle, the operations were conducted in the following areas in the Poori and Balasore districts. In the first named district, the Sudder and Bhanpur thanahs were taken up by 1 head vaccinator and 8 vaccinators and 1 apprentice, who operated in the former thanah on 9,903 persons in 429 villages and in the latter on 9,673 persons in 754 villages. A vaccinator was also sent in the latter part of the season, at the request of Dr. Buckley, Missionary, to village Minchinpatna in thanah Khurda, where he performed 50 operations. The total vaccinations in Poori thus amounted to 19,626. In the Balasore district protection was afforded to the Sudder (including Balasore town), Jellasore, Basta, Bhadrak and Dhamnagar thanahs. In this area 16 vaccinators under 2 head vaccinators performed 24,522 operations in 1,012 villages. In addition to the above, the head vaccinator and 4 vaccinators of the Bhadrak

area were sent in November to the Moharbhanj State to work in Baripada, which had not been protected during the non-working season of 1882-83. This staff operated on 7,518 persons in 431 villages. During the recess 832 person were vaccinated in 54 villages in the suburbs of Cuttack town by some of the Balasore staff for the purpose of establishing lymph, and 44 persons, all unsuccessfully, in four villages in thanah Banki on the occurrence of small-pox in them; aggregating 876 operations in Cuttack.

In the *Behar* Circle, operations were carried on in thanahs Behar, Silao, Atasarai, Massaudhi, Bikram, Futuah, Maner, Dinapore including its town, Bankipore, Barrh, Mokameh, Hilsa and Khwajakalan in *Patna;* in thanahs Dhaka, Motihari, Kasarya, Gobindgunge, Bettiah and Bagaha in *Chumparun;* in thanahs Arrah and Piru in *Shahabad;* and in a few villages in the Jehanabad thanah in Gya. To the first, or Patna area, 23 vaccinators under 2 head vaccinators were allotted, who vaccinated 20,732 persons in 1,051 villages. In the second. or Chumparun area, 16 vaccinators under 1 native superintendent and 1 head vaccinator performed 14,597 operations in 365 villages. In the third, or Shahabad area, 4,255 operations were conducted by 18 vaccinators under 1 native superintendent and 1 head vaccinator in 188 villages—a very poor result. In Jehanabad in Gya 43 operations were performed in six villages by one of the Patna vaccinators. The recess work undertaken for the usual purposes amounted to 4,141 operations (included in the above figures) in the Patna and Dinapore towns, in thanahs Maner and Silao in Patna, and in thanahs Motihari, Dhaka, Kasarya and Bettiah in Chumparun.

In the Municipal Areas.

158. This area embraces 99 Municipalities (including 3 Cantonments) and 27 Dispensaries. In the former and in many of their immediate vicinities, 161 vaccinators performed 65,640 operations, and in the latter 42 operators returned 5,712 vaccinations.

In other Places.

159. In the following places arrangements, other than those mentioned above, obtained. In these areas 21 operators performed in all 5,513 vaccinations, which are included in the statement showing the Municipal work. Protection was afforded to the prisoners in the jails of Julpaiguri, Jessore, Khulna, Mymensing (including the Police), Chittagong, Noakhalli and Chumparun. A vaccinator performed operations in the Chagdighee dispensary in Burdwan at the cost of the Estate of Babu Lalit Mohun Roy, the proprietor of the dispensary. A licensed operator vaccinated the children of the Railway employés on the line of the Northern Bengal State Railway from Sara to Siliguri. In Chittagong a large number of villages in the Puttoah station, and some in the Satkanya and Banskhali stations, and Anwara outpost, were attended to by two vaccinators paid by Government. The Civil Surgeon reports that the two vaccinators allowed by Government to vaccinate this district are not sufficient for effective work, and that more men, under proper supervision, are needed. Operations were carried on in the sub-division of Cox's Bazar by the Assistant Surgeon, and the Kurnafooli and Udalia Tea Estates were protected by two native doctors paid by the Estates. Twenty-five ex-inoculators received licenses from the Civil Surgeon of Shahabad, and they carried on operations wherever they liked in the district, furnishing no returns, except of 200 operations. Parts of 4 thanahs in Tipperah, where small-pox had broken out, were vaccinated by 4 temporary vaccinators engaged by the Magistrate. Two vaccinators performed operations in the Hutwa dispensary, and one each in the Gopalgunge and Bhori dispensaries, in Sarun, at the cost of the Hutwa Raj; and one vaccinator was employed in the Durbhanga dispensary and another in the Neraya dispensary by the Rajah of Durbhanga. In the Bagaha dispensary in Chumparun, vaccinations were performed by the compounder and two ex-inoculators who are mallees, and in the Barharwa dispensary, in the same district, by the peon attached to it; and operations were performed by a vaccinator at the Angul Government Estate and Dispensary at the cost of the Estate.

160. *Port of Calcutta.*—Vaccination in the Port of Calcutta was limited to the crews of vessels specially liable to contract the disease, such as the Maldive boats and Arab buglas. The crew of a steamer in which small-pox had broken out were also operated on.

Degree of protection afforded in the Vaccination Circles.

161. In the town of *Calcutta* there is not a single section to which vaccination has not been extended, but, as stated in former reports, the amount of protection which each section enjoys depends on the class of people residing in it. The sections inhabited by Europeans and the resident Bengalis are better protected than those in which the population is mainly a floating one, or consists of the lower classes of up-country men.

The Superintendent of the *Metropolitan* Circles states that the 11 districts under his supervision have been protected, with the following exceptions. Many villages in thanah Nulhati in Birbhum and in the Murshidabad and Khulna districts, particularly thanah Moreilgunj in the latter, remain unprotected. These villages are occupied mainly by Ferazees, who are stout opponents of vaccination. In the Midnapur and Bankura districts there are here and there still some villages which have not been vaccinated The above is a more qualified statement than those made in former reports, and is supported by the local authorities. Referring to the Ferazee opposition, Dr. Gupta notes that, thanahs Jelinghi, Bhagwangola and Goas in Murshidabad, where this class of Mahomedans reside in large numbers, have, through the assistance of the Magistrate, been protected; but the Civil Surgeon's report shows that the last named thanah suffered exceptionally from small-pox during 1883. He also reports that the Sub-divisional Officer of Bagirhat, in which thanah Moreilgunj is situated, is very indifferent to vaccination, and that when he visited Bagirhat for the purpose of urging that officer to take an interest in vaccination, he refused to see him under the pretence of being "very busy with special duties." Again, according to Dr. Gupta, some Magistrates render assistance in promoting vaccination and some do not. On protection generally he says that, it is very difficult to vaccinate those who have been inoculated, as such people consider themselves protected for life by this process; that the success or failure of re-vaccination depends on the age of the subject operated on, and the length of interval between the dates of primary vaccination and re-vaccination; successes being generally attained by the latter process in the cases of adults who have been primarily vaccinated during infancy or childhood; the contrary in the cases of children re-vaccinated a few years after primary vaccination; and that in areas in which vaccination is deferred for a year or two for special reasons, such as great prevalence of fever, &c., the number of the unprotected increases by births occuring during the interval. This was the case in thanah Ketugram in Midnapore, which has not been the scene of operations for two years, and which, according to the Civil Surgeon, suffered very severely from small-pox during the year under review. Referring to the degree of protection afforded to the town of Midnapore, the Civil Surgeon says that, on examination he found the proportion of the unprotected to be, of 217 children in 5 schools, 20·7 per cent.—one school in Patna showing 44·1 per cent.—of 58 dispensary patients (examined one morning), 20·7 per cent. (adults 11·1 and children 53 per cent.); and of 1,423 admissions into the Central Jail during the year 3·52 per cent. He estimates that about 20 per cent. of the juvenile, and 3 per cent. of the adult population in the town are unprotected, and that this gives about 3,000 unprotected persons; and taking the birth-rate at 34 per 1,000 per annum, and deducting the casualties at 200 per 1,000, (the supposed death-rate among children) there will, he says, arise 913 fresh subjects for vaccination every year, irrespective of adults. This is the work the one vaccinator sanctioned for the town has to accomplish. He adds that when the standing population have been protected, the practical difficulties in the way of maintaining complete protection of the town will be defective birth registration and scarcity of vaccinifers. With regard to the *Suburbs of Calcutta*, Dr. Gupta affirms that the whole of it, consisting of 14 Police sections, "is well vaccinated, and every year each police section is visited over and over again, and there is no place left unprotected." But the late outbreak of small-pox shows that more protection is required.

While there is no place in the *Hill* portion of the *Darjiling* Circle which remains to be vaccinated, no one place in it can be said to be thoroughly protected, owing to fluctuations of population. In illustration of this, Dr. Wood quotes the case of the Castleton Tea Estate. Here 140 operations were performed in April 1883, and it was pronounced to be perfectly protected;

but in March 1884, 76 fresh unprotected subjects were found. Such instances, he adds, indicate how needful it is to prosecute vaccination actively and constantly in the Hills. The whole of the *Plains* portion of this Circle was overrun by vaccinators by the end of the 1882-83 season, and further protection was afforded to it during the year under review.

The observations in the *Ranchi* Circle have elicited the following results:—In *Lohardugga* the adult population does not take vaccination, and, as far as is known, has never been vaccinated; but that, taking into consideration the infants and children, the well protected thanahs in this district are Ranchi, Choria, Balumat, Lohardugga, Sisoi, Palkot, Biru, Bassia, Torpa, Lodhma and Tamar, and the partially protected thanahs are Sili and Burwya. Similarly a large number of the adult population in *Hazaribagh* is unprotected; but with regard to children, thanahs Dumurhi, Jageswar, Kashmar, Bagodhar, Hazaribagh, Chorpa or Chowparun, Kodarma and Pachamba, with the exception of half (80 villages) of Kharagdiha, are considered thoroughly protected. In *Manbhum*, thanahs Jhalda, Chas, Purulia, Manbazar, Topechanchi, and Nirsha; and in *Singbhum*, Atkooshi, Kalkiapore and Kelaipahari in thanah Ghatsilla; Kerapir, Anandpur and Seranda in thanah Chakaldharpur, and the greater part of thanah Khursua, are believed to be thoroughly protected. The rest of the localities in the above districts have been partially protected.

In the *Sonthal Pergunnahs* Circle almost the whole of the Bhagulpore district is stated to have been thoroughly protected; but this is manifestly incorrect, as there is serious prevalence of small-pox in it at present. In *Monghyr*, thanahs Gogri, Jamui, Chakai and Kharakpur have, with the exception of some villages in each, been completely vaccinated, while thanahs Monghyr and Sultangunge have been partially vaccinated; and the untouched areas are thanahs Surajgurra, Sheikhpura, Secandra, Jamalpore, Beguserai and Tegra. With regard to the Sonthal Pergunnahs district, the Deputy Superintendent states that, "there is no place in the district which is not partially protected, work having been carried on in all the thanahs in the district every year."

In the *Eastern Bengal* Circle the Dacca, Faridpore, Pubna and Mymensing districts, which have been the scene of operations for years, are said to be protected. The partially protected areas are Tipperah and Noakhali, and the untouched areas are Backergunge and Chittagong.

In the *Orissa* Circle, where the opposition offered to vaccination is more obstinate than in any other Circle, no area can be said to have been thoroughly protected. But the places in which vaccination has progressed most are the Cantonment, the towns of Jaipore and Kendrapara and the Sudder, Jaipore, Kendrapara, Salipur, Patamundi, Dharmsala and Banki thanahs in *Cuttack;* the Pipli, Khurda and Bhanpur thanahs in *Poori;* and the Chandbali thanah in *Balasore.* Lesser protection has been afforded to thanahs Aul, Tirtol and Jaggatsingpore in *Cuttack;* to the Sudder and Gop thanahs in Poori; and to the town of Balasore, and the sudder Basta, Jellasore, Bhadrak and Dhamnagar thanas in *Balasore;* but no attention has yet been given to the Bhobanaswar outpost of Khurda and Champagurh outpost of Bhanpur in Poori and to thanahs Soro, Baliapal and Bassudevpore in Balasore.

The report from the *Behar* Circle indicates that, the whole of the Patna district (with the exception of a few villages in each thanah, and the Geriak outpost in thanah Behar); thanahs Motihari and Dhaka in *Chumparun*, excepting a few villages; and about three-fourths of the Arrah thanah in *Shahabad* have been thoroughly protected; that thanah Piru and quarter of thanah Arrah in *Shahabad*, and the remainder of thanahs Motihari and Dhaka in Chumparun have been partially attended to; and that the remaining 10 thanahs in Shahabad and 7 in Chumparun, and the whole of the Durbhanga, Mozufferpore, Sarun and Gya (with the exception of thanah Jehanabad) districts have not been touched.

Summary.

162. The following is a summary of the chief results which attended the operations of the year:—

(1) *That protection was afforded for the first time* by Government vaccinators to the following areas, occupying 6,179 square miles and containing a population of 3,800,888, *vide* marginal table:—In the *Sonthal Pergunnahs* Circle, to thanahs Monghyr,

CIRCLES.	Areas in square miles.	Population.
Sonthal Pergunnahs	1,002	662,129
Eastern Bengal ...	1,719	1,073,992
Behar	3,458	2,064,767

Kharakpore, and Beguserai in the Monghyr district; in the *Eastern Bengal* Circle, to thanahs Brahmanberia, Comillah, Nabinagar, Barakamta, Muradpore, Kasba and Hajigunge in the Tipperah district; in the *Behar* Circle, to thanahs Dhaka, Motihari, Kassarya, Gobindgunge, Bettiah and Bagaha in the Chumparun district; to Arrah and Piru in Shahabad; and to Jehanabad (to a small extent) in Gya.

(2) That the following areas, representing 4,416 square miles and containing a population of 1,916,568, as detailed in the margin, were *for the first time placed under the Licensed system of vaccination*, after they had been traversed by the Government vaccinators:—In the *Darjiling* Circle, thanahs Amur Kasba, Arrarea, Matiari, Kissengunge and Balarampore in Purneah, and thanahs English Bazar, Maldah, Gajol, Gomashtapore, Kaliachack, Shibgunge and Nababgunge in Maldah. Thus, the entire circle, excepting its Hill portion, is now vaccinated by licensed agency. In the *Sonthal Pergunnahs* Circle, thanahs Supul, Kissengunge and Madehpura in Bhagulpore.

CIRCLES.	Areas in square miles.	Population.
Darjiling	2,970	1,219.520
Sonthal Pergunnahs	1,446	697,048

(3) That the areas, in addition to those of former years, which had been *thoroughly protected* at the close of the season 1883-84, comprising 37,969 square miles and containing 15,014,069 inhabitants, as indicated in the margin, were:—In the *Darjiling* Circle, the whole of the Plains portion. In the *Ranchi* Circle, thanahs Jhalda, Chas, Purulia, Manbazar, Topechanchi and Nirsha in the Manbhum district, and Atkooshi, Kalkiapur, and Kaliapahari in thanah Ghatsilla, Kerapir, Anandpur and Seranda in thanah Chakaldharpore, and the greater part of thanah Khursua in the Singbhum district. It is also stated that, excluding the adult portion of the population in the Lohardugga and Hazaribagh districts, who will not accept of vaccination, and who, as far as is known, has never been vaccinated, the infants and children in thanahs Ranchi, Choria, Balumat, Lohardugga, Sisoi, Palkot, Biru, Bassia, Torpa, Lodhma and Tamar in the former district, and in thanahs Dumurhi, Jageswar, Kashmar, Bagodhar, Hazaribagh, Chorpa, Kodarma and Pachamba with the exception of half of Kharagdiha, in the latter, have been thoroughly protected. In the *Sonthal Pergunnahs* Circle almost the whole of the Sonthal Pergunnahs and Bhagulpore districts; and thanahs Gogri, Jamui, Chakai and Kharakpore in the Monghyr district, with the exception of some villages in each. The statements of protection in this Circle must be accepted, I regret, in a very modified degree, as small-pox has abundantly shown itself in this area. In the *Eastern Bengal* Circle, Dacca, Faridpore and Mymensing. In the *Behar* Circle, the whole of the Patna district, with the exception of a few villages in each thanah, and thanahs Motihari Dhaka in Chumparun, also excepting a few villages.

CIRCLES.	Areas in square miles.	Population.
Darjiling	271	63.241
Ranchi	13,764	2,318,717
Sonthal Pergunnahs	9,880	3,644,165
Eastern Bengal ...	11,351	6,800,050
Behar	2,703	2,187,596

Source and character of Lymph employed.

163. The arrangements under this head were the same as in the preceding year, except that in addition to humanized, bovine lymph was also pretty generally used. Particulars relating to the latter virus are given in the next paragraph. In *Calcutta*, as anticipated, the animal vaccination depôts greatly lessened the difficulty experienced regarding the supply of virus in the southern division of the town, but in the northern division, where very few people resort to animal vaccination, the difficulty is still very great, especially in the latter part of the season, when the demand for private vaccination is very large. In the *Metropolitan* Circles the usual difficulty of obtaining subjects to serve

as vaccinifers was experienced, particularly in Bankura and Midnapore where the people hold that the vaccinifer generally dies after parting with the virus. Attempts to propagate lymph taken from children resulted in resistance, amounting to assault, in more than one village. Refering to this resistance, the Civil Surgeon of Midnapore offers the following observations:—"The question of the continuous supply of lymph for municipal vaccination is likely eventually to become a serious one, owing to the gradual extinction of unprotected material, and the general aversion the natives have to give their children as vaccinifers. At present the vaccinator is able to meet the demand by making use of the children of Sonthals or other junglees whose parents have no such objection, and who are allowed a small money-reward for the service; but this supply is limited, and will soon cease. Tube lymph cannot be depended on, and its supply would be insufficient. A bovine establishment would of course meet the difficulty, but its cost would, I fear, be prohibitive. A sufficient and continuous supply of lymph would be secured if Government could be induced to make it compulsory for all receivers of gratuitous vaccination to give their children as vaccinifers when required. There would be no hardship in this; the feeling against it is not in any way connected with caste, but is due to selfishness and ignorance: the only objection ever raised is the absurd one that the taking of lymph weakens the child. The unwilling could still have the option of escaping the rule by paying the prescribed fee of four annas. I think it is only fair for the municipality to demand that when they give vaccination gratis to all comers, the recipient should be under the obligation of assisting in the extension of the benefit to the other members of the community." Notions, similar to those mentioned above, are also prevalent in the *Ranchi* Circle. The low castes in some parts, however, took vaccination by the arm to arm process, but crusts had to be employed in the cases of the high castes. In the *Orissa* Circle also this process is stoutly resisted by the orthodox Hindus and the ignorant. In one case a Telee (oilman) severely assaulted a vaccinator while he was taking the virus from the arm of a child. He was prosecuted and sentenced on conviction to six weeks' rigorous imprisonment. Owing to this resistance, rewards had to be offered to the poorer classes to allow their children to be employed as vaccinifers, and recourse was also had to the prisoners in the Poori Jail, and those measures were attended with success. In the *Behar* Circle, crusts had to be employed in some cases when similar resistance was offered.

This Office attended to 90 requests for virus from the Municipalities, Dispensaries, &c., which involved 155 supplies of humanised lymph in 1,271 tubes and 299 crusts, 273 supplies of bovine lymph in 2,015 tubes, and four supplies of English lumph in 20 tubes. The figures of the preceding year are 61 applications, 256 supplies, 1,816 tubes of lymph and 410 crusts. Of the requests for virus a good many came from distant places, such as Indore, Jodhpore, Jeypore, Khettri, Nepal, Port Blair, Bhopawar, Jeddeh, Rajpootana, Delhi, Malwa, &c. In addition, requisitions from Messrs. Bathgate & Co. and Messrs. Smith Stanistreet & Co., chemists and druggists in Calcutta, and from some of the Shipping in the Calcutta Port were also attended to.

164. Bovine lymph was very largely experimented upon during the year under review in Calcutta (the head-quarters of the scheme), and in all the Vaccination circles. To the latter, excepting the Metropolitan circles, the virus was sent from this office. With the same view several Municipalities were also supplied with it, but not to so great an extent.

Bovine Lymph—employment and value of—

165. The subjoined table exhibits at one view the results of the experiment in the above-mentioned areas, excepting the Municipalities, as the operations in them were carried on, with few exceptions, by the Municipal vaccinators, who are unused to manipulate with bovine lymph, and on too limited a scale, and do not, therefore, possess any practical value. Moreover, the details furnished by some of them are defective and incomplete, chiefly because the numbers of several operations prono unced successful, or failures, have not been furnished:—

Number of Operations performed, with results.

	Circles.	Total number vaccinated.	Primary.		Re-vaccination.		Percentages of successful cases to total vaccinated.	
			Number vaccinated.	Number successfully vaccinated.	Number re-vaccinated.	Number successfully re-vaccinated.	Primary.	Re-vaccination.
Direct from Calf.	Central Depôt...	2,896	547	491	2,349	1,103	89·76	46·95
	Municipal Office	137	101	97	36	29	96·04	80·55
	Medical College	277	277	256	......	......	92·41	... ..
	Southal Pergunnahs Circle	148	148	139	......	......	93·91	......
	Total ...	3,458	1,073	983	2,385	1,132	91·61	47·46
With Calf lymph in tubes.	Metropolitan Circles ...	213	213	130	......	......	61·03	......
	Suburbs of Calcutta ...	145	145	134	......	......	92·41	......
	Darjiling Circle	14	14	6	......	......	42·85	......
	Ranchi ,, ...	74	74	70	......	......	94·59	......
	Southal Pergunnahs Circle	99	99	99	......	......	100·	......
	Eastern Bengal ,, ...	33	33	31	......	......	93·93	......
	Orissa ,, ...	513	513	421	......	......	82·06	......
	Behar ,, ...	21	20	8	1	......	40·0	......
	Total ...	1,112	1,111	899	1	......	80·91	......
By arm to arm transmission of Bovine virus.	Sonthal Pergunnahs Circle	11,024	11,024	10,993	......	......	99·71	......
	Eastern Bengal ,, ...	16,679	16,679	16,678	......	......	99·92	......
	Total ..	27,703	27,703	27,671	......	......	99 88	......

The above table demonstrates that of 1,073 primary operations performed in Calcutta and the Southal Pergunnahs circle with lymph taken *direct from the calf*, 983, or 91·61 per cent., proved successful; that of 1,111 operations conducted in the Vaccination circles with lymph *stored in tubes*, 899, or 80·91 per cent., terminated in success; and that 27,671 successes, or at the rate of 99·88 per cent., attended 27,703 vaccinations undertaken in two Vaccination circles with bovine lymph *maintained by the arm to arm process.* These data indicate—

(1). That the results attained by vaccinating with lymph taken *direct from the calf* are, making allowance for the fact that the number of persons vaccinated at the Central depôt in Calcutta does not include 880 who left Calcutta before the results of the operations on them could be ascertained, satisfactory, and in no way inferior to that generally obtained by the employment of humanized lymph.

(2). That while the results achieved by the use of lymph *stored in tubes* were satisfactory in some of the Vaccination circles in which it was experimented upon, a decided opinion on the value of this virus for conducting vaccinations in comparison with that of humanized lymph, similarly stored, cannot be pronounced this year, owing to the facts that in some cases the conduct of the operations was entrusted to vaccinators unaccustomed to manipulate with bovine lymph, and that they were carried on on a somewhat limited scale, especially in Darjiling and Behar, where the most signal failures took place. I believe, however, that with greater care in selecting and storing this lymph, in order to protect it from the deterioration, hereinafter described, during transit, its operative power will compare favourably with that of humanized lymph.

(3). That the results realized by operating with bovine virus *maintained by the arm to arm process* is quite satisfactory and identical with those generally achieved by vaccinating with humanized virus transmitted by the same process.

Turning now to the consideration of the value of bovine in comparison with humanized lymph, and of the causes of non-success in the employment of the former where such occurred, we have the opinions on these points of Dr. Gupta, the Superintendent of the scheme at its head-quarters, and of the several Superintendents of Vaccination in whose Circles, and the Civil Medical Officers in whose Municipalities, the experiments were made. Dr. Gupta's report (the second on the subject), which will be found in Appendix V, possesses a special value, from the facts that the operations were conducted in Calcutta on a more thoroughly organized and systematic manner than in the mofussil, and that he has watched them with

great attention, being more interested in the question than others. His opinions and conclusions on the above points, and a summary of those of the other Superintendents of Vaccination and of the Medical Officers, are subjoined.

Dr. Gupta writes:—"Whenever lymph direct from the calf was used, success was certain: so with good lymph in tubes and used by skilful operators. In cases of failure, the causes of non-success were the mixture of serum, blood and other impurities. In such the lymph is generally coagulated and comes out like a thread from the tube. That the bovine lymph seems more potent appears from the following facts: The fever is stronger and sets in earlier. The swellings and irritation of lymphatic glands are always greater, and, sometimes, where humanized virus had failed, bovine lymph has succeeded. (*see* his report for instances). In the districts the inspectors and vaccinators (in his circle) remarked that the virus was stronger and never degenerated and died out as in former years. In persons who were inoculated during childhood, the bovine lymph has been successful. In re-vaccination cases with calf lymph the percentage of success is much higher than with humanized lymph. Bovine lymph possesses another great advantage over humanized virus, viz., that we always have a plentiful supply whereby we can meet any sudden demand."

The collective opinions of the rest of the Superintendents, excepting of Darjiling and of some of the Civil Surgeons, indicate—(1) that the vesicles raised with this lymph were characteristic and satisfactory, typical, or wholly or almost identical with those obtained from humanized lymph, and that they ran their course in the usual time; (2) that the areola was well developed and attended with less irritation, inflammation or constitutional disturbances; (3) that the operations were not followed by more than the ordinary secondary fever, or by abscesses, sores or ulcers; (4) that by transmission by the arm to arm process, perfect vesicles with well-developed areolas were obtained; and, finally, that, on the whole, satisfactory success has attended the operations with bovine lymph, and that as a protective agent it is not inferior to humanized lymph. On the other hand, some of the Civil Surgeons, who, however, form the minority, have submitted adverse opinions—in some cases unsupported by any definite reason. Their observations point to the following, viz., (1) that the vesicles obtained are rather small, weak and without much areola, and that the course and development of the former are more retarded, the areola being formed on the 10th day; (2) that the fever is high; (3) that the difficulty of preserving and transmitting the lymph is great; (4) that it does not retain its activity in tubes, and that in the hot weather it is inert; and (5) that generally it is unreliable as compared with humanized lymph.

The chief causes of failure are reported to be deterioration of the lymph when transmitted in tubes owing to heat, admixture of air, or inspissation, when it is rendered inoperative.

Calcutta.—Dr. K. McLeod.—*Opinion.*—The results have not been uniformly good. At times the vesicles were very typical and almost identical with those obtained with humanized lymph. Frequently they were found to be small and weak, and there occurred failures occasionally.

Darjiling Vaccination Circle.—Dr. J. J. Wood.—*Operation.*—All the operations performed by the subordinates proved successful. Dr. Wood did not succeed in his cases. *Cause of failure.*—Dr. Wood states that, examined under the microscope, the first supply of lymph sent to him was found to contain what to all appearance was a plethora of red blood—corpuscles—probably bovine blood.

Ranchi Circle.—Dr. W. Owen.—*Operations.*—Of the operations on 74 children, 70, or 94·59 per cent., proved successful. From this source arm-to-arm vaccination was carried out. The latter operations are said to have been successful, but the figures in support of the observation have not been furnished. The Civil Surgeon of Ranchi was also supplied with this lymph. It proved successful in his hands, and he asked for a further supply. *Opinion.*—Cases of non-success were fewer than with humanized lymph, and the employment of the virus was less likely to be followed by abscesses, or sores, or ulcers, or eruptions.

Sonthal Pergunnahs Circle.—Dr. Barker.—*Operations.*—In this circle operations were carried on with lymph taken direct from the calf and also from lymph in tubes locally stored. The first calf, a vaccinated one, was taken

from Calcutta, and 20 others were vaccinated locally. Much difficulty was experienced in the Dumka Sudder station in inducing the people to accept of vaccination direct from the calf. Nevertheless, the 92 operations which were conducted with lymph taken directly from the calf, in the presence or under the supervision of Dr. Barker, proved successful. Operations were also carried on in the Dumka and Deoghur sub-divisions by a painstaking Inspector and a Mahomedan vaccinator, who also shaved and operated on the calves, as the Hindu vaccinators exhibited a disinclination to perform this work. In these areas 56 persons were vaccinated with lymph taken direct from the calf, 47, or 83·92 per cent., successfully, and 11,024 operations were performed by the arm-to-arm transmission of the lymph, and of this number 10,993 proved successful, or at 99·71 per cent. Lymph in tubes was also supplied to the Civil Surgeon of Monghyr, and all the 99 operations performed by him with it proved successsul. *Opinion.*—The Deputy Superintendent of this circle notes, with regard to the character of the vesicles that, "the base of the 'areola' is more wide and the marks more deep in vaccinations performed with bovine lymph than in those performed with humanized lymph."

Eastern Bengal Circle.—Mr. Lyons.—*Operations.*—In this circle lymph from tube was employed on 33 subjects, and was attended with 31 successes, or at the rate of 93·93 per cent. After this 16,679 operations were performed with virus transmitted by arm to arm. Of this number 16,678 proved successful, or at 99 92 per cent. *Causes of failure.*—Some of the tubes sent to this circle could not be used owing to inspissation of the virus within them. Mr. Lyons suggests that the diameter of the tubes be increased. *Opinion.*—Less irritation and constitutional disturbance follow the use of bovine lymph.

Orissa Circle.—Mr. P. Veariah Naidu.—*Operations.*—In this circle 513 persons were vaccinated, 421, or at 82·06 per cent, successfully. *Opinion.*—Mr. Naidu states that the vesicles obtained by the employment of bovine lymph were larger, more characteristic, and, on the whole, more satisfactory than those ordinarily obtained by humanized lymph.

Behar Circle.—Assistant Surgeon Mothuranath Sen.—*Operations.*—In this circle 20 operations were performed, of which only 8, or 40 per cent., proved successful. *Opinion.*—On the merits of the lymph, the Assistant Surgeon writes:—"The course and development of vesicles were rather retarded in all the cases operated on. The areola was formed on the tenth day, and the fever was high. The vesicles in all the cases were typical. After the first transmission, the vesicle took a regular course. I have seen the results of six cases, and it appears to me that it is better than the humanized lymph which is used here."

Soori Town.—Dr. G. C. Roy.—*Operations.*—Here 10 operations were performed, attended with only two successes. The vesicles were slow in their courses, being on the seventh day as large as would be observed on the fifth day of vaccination. There was no increased inflammation or fever, and the vesicles ran through their course in the usual time. *Causes of failure.*—The difficulty of preservation is the great drawback, the large number of failures being evidently due to this cause; and as the people judge of the success by the immediate result of the operation, it is feared that bovine lymph in tubes will never find favour with the mofussilites. *Opinion.*—With regard to the nature of protection, inflammation, and secondary fever, bovine lymph seems to be superior to humanized lymph.

Midnapore Town.—Dr. A. Tomes.—*Operations.*—Of the 34 operations with bovine lymph only 7, or 20·5 per cent., proved successful, while in 15 persons vaccinated with humanized lymph 7, or 40·6 per cent., of successes were obtained. The latter virus was used in the hot weather in March, and the former during the cold weather. *Opinion.*—Considers that these facts illustrate the unreliable nature of bovine as compared with humanized lymph when transmitted in tubes.

Berhampore Town—Dr. S. M. Shircore.—*Operations.*—Here 18 operations were performed with 17 successes. *Opinion.*—After this large number of successful results, the Civil Surgeon states that, humanized lymph cannot for "obvious reasons" be compared with bovine lymph in value.

Comillah Town.—Dr. E. G. Russell.—*Operations.*—Eleven persons were vaccinated, 7, or 63·63 per cent. successfully. No opinion has been offered.

Arrah Town.—Dr. J. O'Brien.—*Operations.*—Not furnished. *Opinion.*—Reports that vaccination was commenced with bovine lymph and then continued by arm to arm transmission, and proved highly successful; that a considerable number of the tubes failed, but that those which proved successful produced perfect vesicles, although rather small and without much areola; and that vaccination from these cases subsequently produced most perfect vesicles with well developed areola, and was most satisfactory in every respect.

Gya Town.—Dr. R. McLeod.—*Operations.*—In 43 operations with bovine lymph, 35, or 81·39 per cent., proved successful, while with humanized lymph 73 cases were attended with 52, or 71·23 per cent., successes. *Opinion.*—Considers that, as the success with the former was considerably greater than that with the latter lymph, the superiority of bovine lymph is clearly established; but adds that the operations conducted with this lymph in June proved altogether unsuccessful.

Durbhunga Town.—Dr. W. A. Gilligan.—*Operations.*—Not furnished. *Opinion.*— Reports that bovine lymph was a grand failure. "I tried it over and over again as supplies frequently arrived from Calcutta upon Indian and English children, and as all the operations were done in my presence, I have no fault to find with the method, yet I never saw a single satisfactory result. I mentioned this fact to the Sanitary Commissioner upon his visit, and he suggested the heating and liquifying of the virus in the tubes, before inoculating; but after having done so, I have had no successful result. So far as my experience with this bovine lymph is concerned, I must, after patient trial of it, say that I regard it as very unreliable compared with ordinary humanized material."

Chuprah Town.—Dr. C. Russel.—*Operations.*—No figures furnished, but all the operations are said to have been failures. *Opinion.*—The Civil Surgeon is not inclined to think favourably of bovine in comparison with humanized lymph, although it would be wrong, he says, to condemn it on such a limited trial, as many causes may have combined to render it inert. He sees no reason why, since this lymph is held in high repute in England, it should not answer admirably here, provided due care is exercised in its selection and storage.

Bettiah Town.—Dr. E. Bovill.—*Operations.*—Twenty operations were performed which are alleged to have been attended with only five successes; but it appears that the native vacciniator who performed the operation did not bring to the notice of the Civil Surgeon the successful cases. Only one case was seen by Civil Surgeon in which there was some approach to success on the ninth day with retarded eruption, one vesicle only having formed. He himself operated on two children and two young men, all unsuccessfully. *Causes of failure.*—The failures are said to be probably due to the lymph not being fresh and to have got heated in transit. *Opinion.*—The Civil Surgeon says that calf lymph, though it retains its activity for a long period for the calf, rapidly deteriorates when used for human vaccination. Noticing that the lymph was particularly clear, he remarks that clear lymph is not so active as when it is somewhat turbid, the small coagula and deposits causing the turbidity, being the most active part of the lymph. It was also fluid, while fresh lymph filled direct into the tube from the vesicle usually coagulates in the tube, and requires to be loosened by passing a horse hair through the tube before it can be blown out. Every care was taken by the Civil Surgeon in performing the operations: he is therefore constrained to believe that the lymph was not in an active condition.

Monghyr Town.—Dr. J. H. Thornton.—*Operations.*—No figures have been furnished. It is, however, stated that the two first supplies all proved successful; but not so all subsequent ones. This was, however, considered of no consequence, as after the operations with the first supplies, arm to arm vaccination was carried on. The Civil Surgeon is unable to account for the failure of the last supplies. Some of the vaccinations with these supplies were performed by the Civil Surgeon himself on European children and adults, but they all failed. He can only suppose that some cause with which he is unaquainted, had rendered the lymph inoperative. But, it is said in the report of

the Superintendent of Vaccination, Sonthal Pergunnahs Circle, that tube lymph was supplied to this officer, and that all the operations with it proved successful.

Maldah Town.—Assistant Surgeon G. C. Chatterjee.—*Operations.*—Here 40 vaccinations were performed, 26, or at 65 per cent., successfully. *Opinion.*—The Assistant Surgeon cannot as yet form an opinion on the subject.

Cuttack Town and Cantonment.—Dr. Stewart.—*Operations.*—Thirteen operations were performed here with seven successes, or at the rate of 53·84 per cent. *Causes of failure.*—The Civil Surgeon believes that the use of lymph from tubes is always attended with a certain amount of uncertainty as to success. It is liable to deterioration like other lymph from heat, admixture of air, or other causes. *Opinion.*—The Civil Surgeon notes that the vesicles that did take were of a characteristic and of a satisfactory nature; and that from the little experience he has had, he is of opinion that this lymph is more reliable and effective than ordinary humanized lymph, but that more extended experience as to its nature and results is necessary.

Puri Town.—Dr. B. Gupta.—*Operations.*—The seven cases in which this lymph was tried here proved failures. *Opinion.*—The Civil Surgeon does not think this failure to be remarkable, or to detract from the value of the lymph as a protective agent, as humanized lymph has similarly failed when secured in tubes and sent from Calcutta. He is of opinion that success would no doubt be attained if the lymph could be had sufficiently fresh.

Chyebassa Town.—Dr. S. J. Manook.—*Operations.*—Forty-six vaccinations were performed in this town, 24 by the Civil Surgeon and 22 by his medical subordinates. Of the Civil Surgeon's operations 16, or 66·66 per cent. were successful, and of his subordinates' operations 9, or 40·9 per cent. *Opinion.*—From the above facts the Civil Surgeon concludes that bovine cannot claim any superiority over humanized lymph.

Further observations and suggestions by Dr. Gupta.

166. There are some points in Dr. Gupta's report which should be noticed here: first, that it is very satisfactory to find that vaccination with bovine lymph is now greatly appreciated, demands for it being very large, so much so that the establishment was barely able to cope with them; secondly, that it is observable that the applicants for vaccination belong mostly to the Christian community (both ladies and gentlemen), and that the natives are in the minority, the proportion of operations among the former being 67·47 per cent. of the total vaccinated and among the latter only 32·53 per cent; thirdly, that a fee should be charged in cases where the calf is carried for vaccination to the houses of private residents, as the demand for home vaccination is increasing considerably, the calls of this nature having amounted to 1,352 during the year under review, to meet which the energy of the establishment is greatly taxed, and some expenditure incurred. On this point Dr. Gupta says:—"It is but right that a small fee should be charged to those who wish to be vaccinated at home. The Compulsory Act (Vaccination) provides a fee for 'home vaccination,' and I do not see any reason for offering gratuitous vaccination with calf lymph, while we charge fees for vaccinating with humanized virus, and thereby putting the latter under a disadvantage." I quite coincide with these observations. Finally, that it is time now that the Bovine Vaccination Scheme should be made a permanent institution. The arrangements secure a supply of virus sufficient to meet all demands, particularly emergent ones. It is for the latter description of cases that the utility of bovine predominates over that of humanized virus, as the former can be made available at all times, but not the latter. It will be seen from that officer's report (Appendix V) that several emergent demands for vaccination were made and promptly attended to during the year under review.

WORK OF THE YEAR.

Total number of Operations performed.

In the Vaccination Circles.

167. Before noticing the results of the year, as set forth in the subjoined table, it should be mentioned, first, that the figures of the Suburbs of Calcutta include the vaccinations at the Inland Emigration Cooly Depôts for only six months—April to June and January to March—the returns of the intervening months not having been furnished, owing to Dr. Gupta having given up the supervision of

vaccinations in the depôts, repudiating all responsibility in the matter, without consulting this office, for reasons reported to Government in this office letter No. 946, dated the 18th February 1884; and, secondly, that, as in the preceding year, 32 returns were received from vaccinators by the Superintendent of the Eastern Bengal Vaccination Circle after his annual statements had been closed, necessitating their omission from the results of this year, to be included in those for the next year:—

CIRCLES.	TOTAL NUMBER OF VACCINATIONS PERFORMED.		DIFFERENCE IN 1883-84.	
	* In 1883-84.	In 1882-83.	Increase.	Decrease.
Calcutta	9,538	11,373	......	1,835
Metropolitan Circles	342,543	344,178	......	1,635
Suburbs of Calcutta, including Cooly Depôts	14,397	15,152	......	755
TOTAL OF METROPOLITAN CIRCLES ...	*356,940	359,330	......	2,390
Darjiling Circle	221,536	282,291	......	60,755
Ranchi "	146,283	110,893	35,390	......
Sonthal Pergunnahs "	106,985	134,571	......	27,586
Eastern Bengal "	351,016	242,518	108,498	......
Orissa "	52,542	43,858	8,684	......
Behar "	39,627	17,487	22,140	......
TOTAL OF VACCINATION CIRCLES ...	1,284,467	1,202,321	82,146	......
Municipalities, Dispensaries, &c.	76,865	59,104	17,761	......
GRAND TOTAL ...	1,361,332	1,261,425	99,907	......

* Inclusive of 10,780 Repetition cases in the Vaccination Circles and 139 in the Municipal Area, aggregating 10,919.

The number of vaccinations performed during the year under review amounted to 1,361,332, against 1,261,425 in the preceding year, to which the *Vaccination circles* contributed 1,284,467 operations, against 1,202,321, and the *Municipalities, Dispensaries*, &c., 76,865, against 59,104, indicating a very satisfactory increase in the numbers vaccinated in both areas, viz. to the extent of 82,146 in the *Vaccination circles*, and 17,761 in the *Municipal area*, culminating in a total increase of 99,907 operations. Considered individually, we have on the side of advancement the Eastern Bengal, Ranchi, Behar and Orissa circles in the order named, and on the side of retrogression the Darjiling, Sonthal Pergunnahs, Metropolitan and Calcutta circles, also in the order mentioned. The retrogression was due, as explained by the respective Superintendents in charge of the circles exhibiting them, to the following causes. In *Calcutta*, to the establishment of the depôt for animal vaccination, where 2,538 persons were operated on, who otherwise would have taken vaccination at the hands of the Calcutta vaccinators. The Superintendent of the *Metropolitan* Circles says: "The causes of the decrease are not far to seek. A bad harvest kept back many from accepting vaccination, as they would not be able to pay the fee." The diminution in work in the *Suburbs* of *Calcutta* has already been accounted for. The reduction of work in the *Darjiling* Circle was referred to the change from Government to Licensed agency operations in Maldah and Purneah, the Government agency on the Hills having returned an excess of 6,929 operations. It is also attributed to the difficulty of securing subjects to serve as vaccinifers which prevented the more vigorous pushing on of operations in Bogra, Rajshahye and Rungpore; and, to some extent, to opposition to vaccination offered in the two first-named districts. The Deputy Superintendent of the *Sonthal Pergunnahs* Circle submits the following reasons as accounting for the falling off in the work of the year:—(1) Great opposition to vaccination met with in suppressing an outbreak of small-pox in thanas Sultangunge, Kolgong, Bhagulpore and Nowada, particularly in the first-named thana; (2) considerable difficulty of the same kind having to be combated with in the Monghyr district, where much new ground had been taken up for operations; (3) non-receipt of returns from many of the licensed vaccinators who worked in Deoghur and Dumka. The last statement is considered by the Superintendent of the Circle to be misleading, as the returns of only a few operations were not received, and as this, as a rule, occurs every year. His own opinion is that the decrease is traceable to increased area travelled over; to decrease of subjects for vaccination, particularly as much distress prevailed owing to failure of crops; to some vaccinators working independently of the department, who kept no registers and

submitted no returns; to the comparative freedom of the circle from small-pox; and to the indifference of the people.

168 The following table indicates which Municipalities, &c., exhibited improvement in vaccinations in comparison with the preceding year, and which exhibited decreases of operations:—

In the Municipalities.

Districts.	Number of Municipalities, &c., in districts.	Difference in 1883-84 in total number vaccinated. Increase.	Decrease.	Districts.	Number of Municipalities, &c., in districts.	Difference in 1883-84 in total number vaccinated. Increase.	Decrease.	Districts.	Number of Municipalities, &c., in districts.	Difference in 1883-84 in total number vaccinated. Increase.	Decrease.
Burdwan	5	669	......	Bogra	5	......	137	Sarun	6	......	398
Bankura	2	83	......	Darjiling	2	......	19	Chumparun ...	5	243	......
Birbhum	1	142	......	Julpaiguri	1	......	6	Monghyr	2	3,579	......
Midnapore	1	228	......	Dacca	2	704	......	Bhagulpore ...	3	383	......
Hughli	4	998	......	Faridpore	1	1,228	......	Purneah	1	equal.	
Serampore	5	406	......	Backergunge ...	1	......	110	Maldah	2	347	......
Howrah	1	904	......	Mymensing	9	809	......	Cuttck	4	......	213
24-Pergunnahs ...	10	1,200	......	Tipperah	6	......	35	Puri	1	......	209
Nuddea	9	1,619	......	Chittagong	7	......	171	Hazaribagh ...	1	......	89
Jessore	2	429	......	Noakhalli	4	48	......	Lohardugga ...	1	566	......
Khulna	1	......	2	Patna	4	1,525	......	Singbhum	1	......	732
Murshidabad ...	4	1,335	......	Gya	8	2,365	......	Manbhum	2	......	245
Dinagepore	1	......	44	Shahabad	7	38	......				
Rajshahye	1	127	......	Mozufferpore ...	5	......	356				
Rungpore	2	111	......	Durbhunga	5	1,795	......				

The pleas furnished in previous reports as having caused retrogression in the progress of vaccination in these instiution were also advanced this year. They need not, therefore, be recapitulated. On the other hand, the great improvement in vaccination, disclosed by the above table, is attributed, chiefly, to more than usual care and attention having been bestowed by the Civil Surgeons generally, and by some of the Assistant Surgeons and Civil Hospital Assistants, in inspecting the work of the vaccinators, and to the more systemized and active manner in which work was carried on under the provisions of the Compulsory Vaccination Act, which, it will be seen from a subsequent portion of this section of the Report, was extended during the year to a large number of the Municipalities.

169. *Primary and Secondary Operations.*

	Number of operations. 1883-84. Primary. Male.	Female.	Total.	Secondary. Male.	Female.	Total.	1882-83. Primary. Male.	Female.	Total.	Secondary. Male.	Female.	Total.	Difference in 1883-84. Primary. Increase.	Decrease.	Secondary. Increase.	Decrease.
Calcutta	4,029	3,728	8,357	943	238	1,181	4,866	4,207	9,073	1,640	660	2,300	......	716	...	1,119
Metropolitan Circles	176,886	165,566	342,452	59	32	91	177,712	166,246	343,958	143	77	220	......	1,506	...	129
Suburbs of Calcutta	5,610	4,420	10,030	2,905	1,462	4,367	4,638	3,666	8,304	4,572	2,276	6,848	1,726	......	...	2,481
Total of Metropolitan Circles.	1[illegible],496	169,986	352,482	2,964	1,494	4,458	182,350	169,912	352,262	4,715	2,353	7,068	220	......	...	2,610
Darjiling Circle ...	115,836	105,693	221,529	3	4	7	147,609	134,615	283,224	43	24	67	......	69,695	...	60
Ranchi " ...	73,684	70,875	144,559	917	807	1,724	55,425	53,537	108,962	995	936	1,931	35,597	......	...	207
Sonthal Pergunnahs " ...	53,974	51,979	105,953	523	509	1,032	68,826	65,709	134,535	24	12	36	......	28,582	996	..
Eastern Bengal " ...	180,604	170,350	350,963	31	22	53	125,419	116,971	242,390	89	39	128	108,573	......	...	75
Orissa " ...	28,242	24,187	52,429	62	51	113	24,176	19,665	43,841	8	9	17	8,588	......	96	..
Behar " ...	19,680	19,745	39,425	116	86	202	8,661	8,795	17,456	18	13	31	21,969	......	171	..
Total of Vaccination Circles.	659,145	616,552	1,275,697	5,559	3,211	8,770	617,332	573,411	1,190,743	7,532	4,046	11,578	84,954	......	...	2,808
Municipalities, Dispensaries, &c.	41,924	32,898	74,822	1,430	613	2,043	32,287	24,347	56,534	1,660	910	2,570	18,288	......	...	527
Grand Total ...	701,069	649,450	1,350,519	6,989	3,824	10,813	649,619	597,658	1,247,277	9,192	4,956	14,148	103,242	......	...	3,335

Coincident with the advance in total vaccinations, there was an increase in primary vaccinations, the increment being represented by 84,954 operations in the Vaccination circles and 18,288 in the Municipal area, aggregating

103,242 operations. There was diminution in the number of secondary operations to the extent of 3,335. The decrement is chiefly seen to have occurred in Calcutta and in the Suburbs of Calcutta, traceable in the former area to the expansion of the bovine vaccine scheme relieving the humanized vaccine system of many operations of this class, and in the latter to the absence of the records of operations in the Cooly Depôts for six months, for reasons submitted in a previous paragraph of this Report.

170. *Rates of success in Primary and Secondary Operations.*

	Number of Successful Vaccinations.				Ratio per cent. of Successful Cases.			
	In 1883-84.		In 1882-83.		In 1883-84.		In 1882-83.	
	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.
Calcutta ...	8,805	191	9,016	287	99·37	10·46	99·37	12·47
Metropolitan Circles ...	341,790	29	343,040	192	99·83	33·22	99·70	87·67
Suburbs of Calcutta ...	9,964	1,228	8,300	1,646	99·74	32·24	99·06	26·68
Total of Metropolitan Circles ...	351,754	1,257	351,340	1,838	99·82	32·24	99·76	28·77
Darjiling Circle ...	219,090	7	280,425	60	99·68	100·	99·78	89·55
Ranchi " ...	132,821	1,691	98,929	1,439	92·72	98·48	92·57	85·18
Sonthal Pergunnahs " ...	105,541	550	134,052	21	99·67	56·70	99·75	58·33
Eastern Bengal " ...	350,132	37	241,240	78	99·83	60·81	99·62	60·93
Orissa " ...	51,418	113	41,268	17	98·18	100·	64·29	100·
Behar " ...	38,839	25	17,159	27	98·94	12·56	98·65	90·
Total of Vaccination Circles ...	1,257,900	3,871	1,173,429	3,767	98·89	47·69	98·87	35·45
Municipalities, Dispensaries, &c. ...	66,953	1,104	50,132	1,730	94·60	56·67	92·77	69·70
Grand Total ...	1,324,853	4,975	1,223,561	5,497	98·60	49·42	98·60	45·12

The operations, of which the results were unknown, and which, therefore, are not included in the above table, amounted to 3,743 in the Vaccination Circles and 4,049 in the Municipal area, aggregating 7,792.

From this table we find that a higher standard of success was returned by the Calcutta, Metropolitan, Darjiling, Sonthal Pergunnahs and Eastern Bengal Circles than by the Ranchi, Behar and Orissa Circles. In the last-named circle the rate of success exhibits considerable improvement on that of the preceding year. Ranchi stands lowest in ratio of success in primary cases. The Civil Surgeon of Pubna remarks that the percentage of success in the Eastern Bengal Circle is overstated, as, from an examination of some 60 cases, he is of opinion that about only 85 to 90 per cent. of the operations in this circle could have been successful. An improvement in this direction is also seen in the total primary vaccinations in the Municipal area, but the rate of success is inferior, the depreciation having been influenced by the returns from the institutions situated in the districts named below. The extent of reduction of success is noted opposite each:—

Districts.	Number of Municipalities, &c.	Decrease in percentages of success.	Districts.	Number of Municipalities, &c.	Decrease in percentages of success.
Singbhum ...	1	19·42	Rajshahye ...	1	2·48
Hazaribagh ...	1	16·34	Maldah ...	2	1·09
Chittagong ...	7	15·11	Manbhum ...	2	·91
Midnapore ...	1	8·21	24-Pergunnahs ...	10	·90
Poori ...	1	6·67	Nuddea ...	9	·38
Hughli ...	4	5·29	Tipperah ...	6	·37
Sarun ...	6	3·13	Burdwan ...	5	·26
Cuttack ...	4	2·68	Howrah ...	1	·22

Depressed success in the above-mentioned Vaccination circles and Municipal areas vitiated the combined general result of the entire area under operation. The rates of success in re-vaccinations are generally unreliable, and this, I believe, arises from imperfect knowledge of their condition on the part of persons operated on; and from the vaccinators depending on their statements and omitting to examine the subjects properly.

171. *Average number of operations performed by each vaccinator.*

Circles.	Number of vaccinators. 1883-84.	Number of vaccinators. 1882-83.	Number of operations per man. 1883-84.	Number of operations per man. 1882-83.	Difference in 1883-84. Increase.	Difference in 1883-84. Decrease.
Calcutta	11	16	867	711	156	......
Metropolitan Circles	342	306	1,001	1,124	......	123
Suburbs of Calcutta	10	10	1,439	1,515	.....	76
Total of Metropolitan Circles ...	352	316	1,014	1,137	......	123
Darjiling Circle	189	250	1,172	1,129	43	......
Ranchi "	222	185	659	599	60	......
Sonthal Pergunnahs "	118	118	907	1,140	......	233
Eastern Bengal "	298	219	1,178	1,107	71	......
Orissa "	29	30	1,812	1,462	350	......
Behar "	58	30	683	582	101	......
Total of Vaccination Circles ...	1,277	1,164	1,005	1,032	......	27
Municipalities, Dispensaries, &c.	224	123	343	480	......	137
Grand Total ...	1,501	1,287	907	980	......	73

The figures in the above table indicate increased energy on the part of the vaccinators of the Orissa, Calcutta, Behar, Eastern Bengal, Ranchi and Darjiling Circles, against a decline in the work of the operators in the Sonthal Pergunnahs and Metropolitan Circles, in the order mentioned. The improvement in *Calcutta* and in *Darjiling* was effected by a reduced number of operators, in the latter circle their number being considerably lower. In *Orissa* an almost equal strength of operators produced an improvement which is comparatively the greatest. To these men, as well as to their supervising officers, great credit is due. On the other hand, a larger staff of operators in the *Metropolitan Circles* and an equal one in the Sonthal Pergunnahs Circles produced considerably reduced work as credited to each man. The falling off in these circles had the effect of causing a diminution of 27 operations per man in all the Vaccination circles.

172. *Comparative amount and value of work performed by the Government and Licensed Agencies.*

Agencies.	Circles in which employed.	Number of Vaccinators employed.	Total number vaccinated during the year.	Primary vaccination. Total.	Primary vaccination. Successful. Under one year.	Primary vaccination. Successful. One year and under six years.	Primary vaccination. Successful. Above six years.	Primary vaccination. Successful. Total at all ages.	Re-vaccination. Total.	Re-vaccination. Successful. Under one year.	Re-vaccination. Successful. One year and under six years.	Re-vaccination. Successful. Above six years.	Re-vaccination. Successful. Total at all ages.	Percentage of successful cases. Primary.	Percentage of successful cases. Re-vaccination.	Average number of persons vaccinated by each vaccinator.	Proportion of persons successfully vaccinated per 1,000 of population.
Licensed Agency.	Metropolitan, Darjiling, Ranchi, Sonthal Pergunnahs and Eastern Bengal	952	893,055	890,188	124,673	607,304	145,737	877,714	2,867	8	264	2,026	2,298	98·81	82·15	938	19·1
Government Agency.	Calcutta, Suburbs of Calcutta, Darjiling, Ranchi, Sonthal Pergunnahs, Eastern Bengal, Orissa and Behar	325	391,412	385,509	41,710	228,405	110,071	380,186	5,903	45	285	1,243	1,573	99·08	29·56	1204	8·2

	Increase or decrease in the work of the Licensed Agency.
In total Vaccinations ...	501,643 I
" primary " ...	504,679 I
" successful " ...	497,528 I
" infant " ...	82,963 I
" vaccinations of Children ...	378,899 I
" vaccinations of Adults ...	35,66[illegible] I
" operations performed by each vaccinator ...	266 D
" proportion of population protected ...	10·82 I

The marginal summary, taken from the above table, indicates that the work performed by the Licensed agency was considerably better than that performed by the Government Agency in every respect, except that, gauged by the number of operations performed by each of them, the licensed vaccinators exhibited less energy in pursuing their work than the Government men.

173. *Vaccination according to Age.*

Circles	Total number of persons primarily vaccinated in 1883-84	Ages of the successfully vaccinated in 1883-84: Under one year	One year and under six years	Above six years	Proportion per cent to total primarily vaccinated in 1883-84, excluding the unknown: Under one year	One year and under six years	Above six years	Proportion per cent to total primarily vaccinated in 1882-83: Under one year	One year and under six years	Above six years
Calcutta	8 977	2 791	4 574	1 140	31 00	54 73	13 64	27 59	62 43	9 33
Metropolitan Circles	842 152	33 101	243 726	[illegible]	9 68	68 20	21 90	9 78	67 40	23 18
Suburbs of Calcutta	10 030	1,482	6 795	1 647	14 53	67 01	18 48	17 21	65 50	17 24
Total of Metropolitan Circles	352 182	34 783	240 811	76 660	9 81	68 25	21 75	9 95	67 44	22 66
Darjiling Circle	[illegible]	48 537	[illegible]	21 091	22 08	67 77	9 82	19 37	66 59	14 01
Ranchi "	144 751	33 393	[illegible]	9 571	23 31	62 76	6 64	23 74	65 07	4 25
Sonthal Pergunnahs "	[illegible]	17 214	77 805	15,732	11 52	73 48	14 06	6 55	78 59	14 90
Eastern Bengal "	360 068	29 701	206 793	114 138	8 92	58 [illegible]	32 54	8 5	58 46	32 61
Orissa "	[illegible]	[illegible]	[illegible]	13 583	4 78	67 46	25 93	6 44	77 47	10 47
Behar "	[illegible]	3 368	31 886	3 633	8 [illegible]	81 11	9 25	8 27	86 16	4 22
Total of Vaccination Circles	1 275 697	166 383	[illegible]	255 809	13 08	65 70	20 11	12 68	66 85	19 40
Municipalities, Dispensaries, &c.	74 822	12 104	41 629	13 220	17 10	58 82	18 07	17 02	55 01	20 73
Grand Total	1 350 519	178 487	877,339	269,028	13 29	66 31	20 01	12 81	66 33	19 46

This table indicates that of the 1,275,697 primary operations in the Vaccination circles, 13 08 per cent. were performed on infants under one year, 65·70 on children between one and under six, and 20·11 on children above six years and adults, demonstrating, again, that children between one and under six years are the most largely protected, and infants below one the least. This feature is presented by all the Vaccination circles, except Calcutta, Darjiling and Ranchi, where infants received greater protection than the adults. The general results of the Municipal area accord with those which are common to the majority of the Vaccination circles. Apart from several other causes, the main reason why a larger ratio of protection is seen among children above one and under six years of age than among infants, is that, parents or guardians (particularly mothers) greatly fear to expose children of tender age to vaccination, which is considered to be attended with much risk In Municipal towns, or other areas, where the Compulsory Vaccination Act is in force, a limit of 12 months is fixed under its provisions, within which parents or guardians cannot be compelled to present their children for vaccination. We may be sure that full advantage is taken of the latitude allowed by the law. In comparison with the results of the preceding year, a small improvement is seen in the percentage of infants vaccinated; and as the results of 1882-83 were in advance of those of its predecessor, the improvement may be considered to be progressive. To this improvement all the circles contributed, excepting Orissa, where there was a considerable falling off, and Metropolitan, Behar and Eastern Bengal, where there was hardly any progress.

174. *Vaccination according to Sex.*

Circles	In 1883-84: Population: Males	Females	Number vaccinated: Males	Females	Proportion per cent to total vaccinated: Males	Females	Proportion per cent to sexual population: Males	Females	In 1882-83: Proportion per cent to total vaccinated: Males	Females	Proportion per cent to sexual population: Males	Females
Calcutta	288 817	144 402	5 572	3 966	58 41	41 58	1 93	2 74	57 20	42·79	2·25	3·37
Metropolitan Circles	6,695,547	6,900 212	176 945	165 508	51 65	48 34	2 64	2 39	51 67	48·32	2 62	2·38
Suburbs of Calcutta	147,205	104 234	8,516	5 882	59 14	40 85	5 78	5 64	60 78	39 21	6 25	5 70
Total of Metropolitan Circles.	6,832,752	7,004,446	185,460	171 480	51 95	48 04	2 71	2 49	52·05	47 94	2·70	2·48
Darjiling Circle	4 510,564	4 380 337	115 839	105 697	52 28	47 71	2 56	2·41	52·30	47 69	3·27	3·07
Ranchi "	2 002 574	2 034,379	74,601	71 682	50 09	49 90	3 72	3 54	50·87	49·12	4 98	4·75
Sonthal Pergunnahs "	2 208 011	2,232 865	54,497	52,458	50 93	49 06	2 46	2 35	51 16	48·83	3 23	3 07
Eastern Bengal "	4 634 735	4,697 289	180,835	170 581	51 16	48 58	3 89	3·62	51·75	48·24	3·47	3·20
Orissa "	792 102	808 582	28 904	24 239	51 71	48 28	3 57	3 00	55 14	44·85	2 00	1 67
Behar "	1,741,088	1,777,806	19,796	19,831	49 95	50 04	1 14	1 11	49 63	50 36	·94	·91
Total of Vaccination Circles	2,3000,843	23,067,616	664,704	619,763	51 [illegible]	48 25	2·88	2 68	51 97	48 02	3·01	2·78
Municipalities Dispensaries &c	1,138,826	1,086,189	43,358	33 507	56 40	43 59	3 80	3·08	57 43	42·56	3·56	2·84
Grand Total	24,139,669	24,153,825	708,062	653,270	52 01	47 98	2 93	2·70	52·22	47·77	3·04	2·78

Of the sexes vaccinated, as set forth in the above table, the males exceed the females as in former, years, in the Vaccination circles, whether considered numerically (664,704 against 619,763), or in proportionate relationship with the total vaccinations of the year (51·74 against 48·25 per cent.), or with the sexual populations (2·88 against 2·68 per cent). The figures of each of the Vaccination circles (excepting Behar, which exhibits a preponderance of females vaccinated) as well as of the Municipal area, disclose the same features. Both the males and females, were best protected in the Suburbs of Calcutta, and in the next degree in the Eastern Bengal, Ranchi and Orissa Circles, as well as in the Municipal area. Contrasted with the preceding year, increase in the proportions of both the male and female populations protected is returned by the Orissa, Eastern Bengal, Behar and Metropolitan circles, notably by the first-named circle, and decreases by the other circles, Ranchi conspicuously. These increments and decrements culminated in a decline in the proportions protected of both the male and female populations in the whole area under operation.

175. *Vaccination according to Class or Religion.*

CIRCLES.	POPULATION.				Proportion per cent. in 1883-84 of each Class to total vaccinated.				Proportion per cent. in 1883-84 of each Class to population under each Class.				Proportion per cent. in 1882-83 of each Class to total vaccinated.				Proportion per cent. in 1882-83 of each Class to population under each Class.			
	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.
cutta	22,755	278,762	124,430	7,272	8·55	62·03	28·81	·59	3·58	2·12	2·20	·78	6·47	58·66	34·20	·05	2·78	3·46	3·12	2·08
tropolitan Circles	16,429	8,923,462	4,428,974	216,894	·17	63·80	35·81	·10	3·74	2·44	2·77	·31	·08	68·55	30·78	·56	1·73	2·63	2·31	·96
burbs of Calcutta	4,048	140,930	96,583	878	·93	70·29	28·76	...	3·33	6·75	4·28	...	1·08	76·51	22·10	...	4·05	7·73	3·51	...
TAL OF METROPOLITAN CIRCLES.	20,477	[illegible],073,392	4,525,557	217,772	·20	64·06	35·55	·19	3·65	2·52	2·80	·31	·13	68·89	30·43	·54	2·17	2·71	2·34	·96
...ling Circle ...	1,512	3,864,240	4,996,882	28,267	·01	41·59	52·08	5·69	2·64	2·38	2·33	44·06	·002	43·88	50·50	8·01	·48	3·35	2·85	36·08
...hi " ...	38,546	3,122,487	163,983	702,237	·68	93·13	3·19	2·67	2·60	4·37	2·85	·55	·61	69·03	3·22	27·12	4·18	5·96	3·37	7·47
thal Pergunnahs " ...	3,381	3,457,711	356,181	628,653	·19	55·25	6·69	37·85	6·03	1·70	2·01	6·49	·04	56·71	6·17	37·06	1·78	2·31	2·50	7·89
stern Bengal " ...	14,905	3,287,598	6,025,707	3,754	·02	33·24	66·56	·16	·63	3·54	3·87	15·50	·04	40·43	57·90	1·62	·92	3·81	3·01	20·13
ssa " ...	1,272	1,368,120	30,243	198,949	·20	99·33	·46	...	8·33	3·81	·81	...	·08	99·23	·68	...	2·82	2·15	·60	...
har " ...	2,688	3,137,430	308,346	20	·005	82·83	17·15	·002	·07	1·04	1·81	5·0	·02	87·72	12·23	·01	·15	·92	1·00	3·84
TAL OF VACCINATION CIRCLES.	105,530	27,580,740	16,591,279	1,781,924	·23	56·38	38·83	4·54	2·85	2·62	3·00	3·27	·17	57·68	34·14	7·99	2·47	2·87	2·71	7·45
unicipalities, Dispensaries, &c.	13,341	1,532,894	680,126	8,654	1·87	61·98	30·28	2·85	10·80	3·27	3·12	25·35	2·03	65·77	28·40	3·78	7·51	3·08	3·73	34·80
GRAND TOTAL ...	118,877	29,112,634	17,271,405	1,790,578	·32	56·87	38·35	4·44	3·74	2·65	3·02	3·38	·20	58·06	33·87	7·70	3·27	2·90	2·74	7·58

The figures in the above table disclose that, calculated on the *gross numbers vaccinated*, the largest proportion of the operations were performed on the Hindus, next on Mahomedans, third on those classed under the head of "Other races," and least on Christians, both in the Vaccination circles and in the Municipal area. Examining the returns of each circle, the above order is departed from in Calcutta, where more Christians than "Other races" were operated on; in the Darjiling and Eastern Bengal Circles, where the operations on the Mahomedans exceeded those on the Hindus, and in the Sonthal Pergunnahs, where the operations on the "Other races" preponderated over those on the Mahomedans. Relatively to *populations* operated on, the greatest protection was afforded to those recorded under the head of "Other races" next to Mahomedans, then to Christians, and least to Hindus in the Vaccination circles; but in the Municipal area the Christian population was protected at a considerably higher rate than the Hindu. Taken individually, the protection varies in each from that afforded to all the circles combined: thus, in Calcutta, the Metropolitan and Orissa Circles, the Christians received most protection, and the Hindus and Mahomedans in the two first-named circles at an almost equal rate; in the Ranchi circle the Hindus were best protected; in the Sonthal Pergunnahs the Christians received better protection than the Hindus and Mahomedans; and in the Eastern Bengal and Behar the Christians were least attended to, while in the former circle, as well as in the Darjiling circle, the protection afforded to those coming under the head "Other races" was very considerably greater than that to the other nationalities in those circles. In comparison with the results of

the preceding year, we have, during the year under review, in the Vaccination circles considered as a whole, on the side of better protection the Mahomedans and the Christians, and on the reverse side the Hindus and the "Other races," in relation both to the *total numbers vaccinated* and to the proportions calculated on the *populations*.

176. *Protection afforded to the number born during the year.*

Circles.	Estimated Births at 30 per 1,000 of population.	Number of Infants under one year, who were successfully vaccinated.	Number of Infants under one year, who died from all causes.	Number of Infants under one year who remained unprotected.	Proportion per cent on number born.				Number of Children under six years who were successfully vaccinated.	Difference in 1883-84.	
					Of Infants who were vaccinated.		Of Infants who died.	Of Infants who remained unprotected.		Proportion per cent. on number born of infants vaccinated.	
					1883-84	1882-83.				Increase.	Decrease.
Calcutta	12,996	2,591	2,376	8,029	19·93	19·26	18·28	61·78	7,165	·67	—
Metropolitan Circles ...	407,574	33,102	31,011	343,461	8·12	8·14	7·61	84·26	266,841	—	·02
Suburbs of Calcutta ..	7,543	1,514	1,693	4,336	20·07	18·94	22·44	57·48	8,473	1·13	—
Total of Metropolitan Circles ...	415,117	34,616	32,704	347,797	8·33	8·34	7·87	83·79	275,314	—	·01
Darjiling Circle ...	266,727	48,537	14,854	203,336	18·19	20·31	5·56	76·23	197,493	—	2·12
Ranchi " ...	120,819	33,397	9,559	77,863	27·64	35·60	7·91	64·44	123,518	—	7·96
Sonthal Pergunnahs Circle	133,226	12,204	8,880	112,142	9·16	6·88	6·66	84·17	90,031	2·28	—
Eastern Bengal Circle	279,959	29,204	23,873	226,882	10·43	9·51	·852	81·04	230,011	·92	—
Orissa " ...	47,957	2,519	9,209	36,229	5·25	3·78	19·20	75·54	37,938	1·47	—
Behar " ...	105,254	3,368	15,401	86,485	3·19	2·55	14·63	82·16	35,224	·64	—
Total of Vaccination Circles ...	1,382,055	166,436	116,856	1,098 763	12·04	12·04	8·45	79·50	1,002,694	Equal	
Municipalites, Dispensaries, &c.	66,750	12,124	9,236	45,390	18·16	16·74	13·83	68·0	54,007	1·42	—
Grand Total ...	1,448,805	178,560	126,092	1,144,153	12 32	12·24	8 70	78·97	1,056,701	·08	—

From the above table we learn that the vaccinators have not yet been able to reach the most effective age for vaccination, viz., infancy, for the figures show that of the 1,448,805 births, estimated at the low rate of 30 per 1,000 of the population within the vaccination area, only 12·32 per cent. of infants, exclusive of those who died, were successfully vaccinated; thus leaving the large proportion of 78·97 per cent. of infants unprotected. This defect is seen to obtain in every Circle as well as in the Municipal area, for nowhere has the birth-rate been overtaken by the infant vaccination ratio. In comparison with the results of the preceding year, improvement in this respect was, however, effected in the Sonthal Pergunnahs, Orissa, Suburbs of Calcutta, Eastern Bengal, Calcutta and Behar Circles, which returned excess percentages of infantile vaccinations of 2·28, 1·47, 1·13, ·92, ·67, and ·65, the progress in the first named circle being the greatest. The Municipal area also shows an advancement, as it exhibits an increase in infant vaccination of 1·42 per cent. in comparison with the ratio of 1882-83.

Calculated on the births *actually recorded* in Calcutta and its Suburbs—8,719 and 5,274 respectively—it is found that, deducting the numbers who died, the proportions of the infants protected and unprotected amount in Calcutta to 29·71 and 43·03 per cent. respectively, and in the Suburbs to 28·70 and 39·19 per cent. respectively, on the total numbers available for operation.

Inspections.

177. The degree of supervision exercised by the inspecting officers over the work of the vaccinating staff, and the relative merits of inspections made by them, will be gathered from the figures in the subjoined table :—

1	2			3			4	5			6			7			8		
Circles.	Number of inspecting officers.			Number of villages visited by—			Total number of persons vaccinated during 1883-84.	Number of persons found to have been vaccinated by—			Number of persons found to have been successfully vaccinated by—			Proportion per cent. of successful cases observed by—			Proportion per cent. of inspection to total number vaccinated.		
	Superintendents.	Deputy Superintendents.	Superintending vaccinators.	Superintendents.	Deputy Superintendents.	Superintending vaccinators.		Superintendents.	Deputy Superintendents.	Superintending vaccinators.	Superintendents.	Deputy Superintendents.	Superintending vaccinators.	Superintendents.	Deputy Superintendents.	Superintending vaccinators.	Superintendents.	Deputy Superintendents.	Superintending vaccinators.
Government Agency.																			
Calcutta	1	1	...	Not furnished.			9,538	286	4,049	.....	286	4,028	....	100·	99·48	...	2·99	42·45	...
Suburbs of Calcutta ...	1	1	3	Ditto.*			14,397	803	4,778	9,184	797	4,687	8,961	99·25	98·09	97·57	5·57	33·17	63·77
Darjiling Circle	1	...	1	15	...	112	14,142	1,237	......	8,106	974	......	7,197	78·73	...	91·37	8·74	...	57·31
Ranchi Circle	1	...	4	565	...	1,139	37,117	7,332	....	22,508	6,978	....	21,383	93·80	...	95·01	19·73	..	60·61
Sonthal Pergunnahs Circle	...	1	7	...	186	1,176	40,617	......	6,448	31,185	.....	6,317	31,036	..	97·96	99·52	..	15·87	76·77
Eastern Bengal Circle ...	1	1	7	138	26	1,168	193,792	14,607	1,320	72,030	14,504	1,209	70,875	99·29	98·40	98·39	74·60	·67	36·78
Orissa Circle	1	...	...	794	...	....	52,542	30,308	....	....	20,505	......	....	97·35	...	..	57·68	..	
Behar Circle	1	...	5	424	...	1,091	39,627	10,794	....	21,032	10,555	...	20,792	97·78	...	98·85	27·21	..	55·59
Total ...	7	4	27	1,936	212	4,681	403,772	65,367	16,595	164,045	64,499	16,331	160,456	97·14	98·40	97·81	16·18	4·10	40·62
Licensed Agency.																			
Metropolitan Circles ...	1	4	30	505	1,812	7,680	342,543	25,624	89,283	292,057	25,579	89,147	291,634	99·82	99·84	99·85	7·48	26·06	85·26
Darjiling Circle	1	2	11	100	722	3,467	207,394	3,797	19,612	89,569	3,239	18,283	84,629	85·30	93·22	94·48	1·83	9·45	43·18
Sonthal Pergunnahs Circle	...	1	6	...	454	1,858	66,368	......	14,642	51,580	.. .	14,474	50,756	.	98·85	98·40	..	22·06	77·71
Ranchi Circle . ..	1	1	6	...	376	1,134	109,160	14,046	12,076	30,925	13,685	11,645	28,757	97·42	96·43	92·98	12·96	11·06	28·33
Eastern Bengal Circle ...	1	...	3	38	...	572	156,224	3,999	....	39,978	3,960	....	39,447	99·02	...	98·67	2·57	...	25·75
Total .	4	8	65	643	3,364	14,719	880,695	47,466	135,613	504,109	46,463	133,519	495,222	97·88	98·47	98·23	5·38	15·39	57·24
Grand Total ..	..	...	...	2,579	3,576	19,400	1,284,467	112,833	152,208	668,154	109,962	149,880	655,678	97·45	98·47	98·13	8·78	11·84	52·01

* The Deputy Superintendent visited 357 and the Superintending vaccinators 522 paras and bustis.

This table discloses the following results:—

(*a*)—That 2,579 villages were inspected by the Superintendents of Vaccination, against 3,177 in the preceding year; 3,576 by the Deputy Superintendents, against 4,082; and 19,400 by the Superintending vaccinators, against 20,015, indicating a diminution in the work of all these officers to the extent of 598 inspections by the Superintendents, 506 by the Deputy Superintendents, and 615 by the Superintending vaccinators.

(*b*).—That individually considered, the officers marginally indicated returned, in comparison with their work in 1882-83, a smaller number of villages inspected during the year under review. The extent of retrogression is noted in each case.

Circles.	Superintendents.		Deputy Superintendents.		Superintending Vaccinators.	
	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency.
Metropolitan	..	66	...	253	.	695
Darjiling	210	...	705	...	1,185	...
Sonthal Pergunnahs ...	...	...	168	...	918	...
Ranchi	...	89	245	...	...	...
Eastern Bengal	12	169	...	173	...	...
Orissa	402	...	...	...	...	...

(*c*).—That, on the other hand, advances in village inspections were effected by the officers named in the marginal table; the extent of improvement being also noted in each case.

Circles.	Superintendents.		Deputy Superintendents.		Superintending Vaccinators.	
	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency.
Darjiling	...	100	...	469	...	1,194
Sonthal Pergunnahs ...	...	...	...	293	...	31
Ranchi	250	...	...	250	685	15
Eastern Bengal	...	...	26	...	144	158
Behar	Equal.		...	...	56	...

(*d*).—That scrutinizing the figures demonstrating the relative merits of the inspection work performed by the different officers in relation to the inspection of the numbers vacci-

nated, it is found that, on the whole, the Superintendents inspected 8·78 per cent. of the number vaccinated during the year, against 7·79 per cent. in the preceding year; the Deputy Superintendents 11·84, against 14·72 per cent; and the Superintending vaccinators 52·01, against 55·85 per cent., indicating an improvement in the work of the Superintendents, against a falling off in those of the Deputy Superintendents and Superintending vaccinators, particularly of the latter. On the whole the outturn of this work is not satisfactory. Looking into each officer's work, it is seen that the largest numbers of inspections, as represented by the percentages of inspections of total numbers vaccinated, were made by the—

	Superintendents.			Deputy Superintendents.			Superintending Vaccinators.	
	Government agency.	Licensed agency.		Government agency.	Licensed agency.		Government agency.	Licensed agency.
Eastern Bengal Circle	74·60	......	Suburbs of Calcutta ..	......	......	Suburbs of Calcutta ..	63·76	......
Orissa „ ...	57·68	......	Metropolitan Circles...	33·17	26·06	Darjiling Circle ...	57·31	......
Behar „ ...	27·23	......	Sonthal Pergunnahs Circle.	......	22·00	Ranchi „ ...	60·64	......
						Sonthal Pergunnahs Circle.	76·77	77·71
						Behar Circle ...	55·59	......
						Metropolitan „ ...	......	85·26

(*e*).—That in comparison with the results of the preceding year under the head of inspections of vaccinations, it is found that some officers have progressed while others have retrograded this year—*vide* subjoined table:—

Circles	Increase in proportions per cent. of inspections of total number vaccinated						Decrease in proportions per cent. of inspections of total number vaccinated					
	By Superintendents.		By Deputy Superintendents.		By Superintending vaccinators.		By Superintendents.		By Deputy Superintendents.		By Superintending vaccinators.	
	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency.	Government agency.	Licensed agency
Metropolitan	......	......	......	......	......	......	......	1·71	......	1·59	......	4·23
Darjiling	......	1·83	......	5·36	7·00	10·87	2·83	......	29·00	......	......	......
Ranchi	......	10·60	......	3·65	11·26	......	1·51	......	25·74	......	......	15·44
Sonthal Pergunnahs	......	......	......	13·16	3·98	......	......	......	·95	......	......	·43
Eastern Bengal	63·79	......	·69	......	......	7·27	......	5·96	......	6·53	19·00	......
Orissa	31·02	......	......	......	......	......	......	......	......	......	......	......
Behar	......	......	......	......	......	......	24·58	......	......	......	31·82	......

The figures indicate that creditable progress was made in inspection work by the Superintendents of the Eastern Bengal, Orissa and Ranchi; by the Deputy Superintendent of the Sonthal Pergunnahs Circle; and by the Superintending vaccinators of the Ranchi (*Government*) and Darjiling Circles. On the other hand, conspicuous decline is seen in the proportions of inspections of the Superintendent of the Behar Circle, of the Deputy Superintendents of the Darjiling and Ranchi Circles, and of the Superintending vaccinators of the Behar, Eastern Bengal and Ranchi (Licensed) Circles.

(*f*).—That with regard to the quality of the work of the vaccinators, the verifications of all the inspecting officers show that it was satisfactory in all the circles, except Darjiling, with regard to both the Government and Licensed vaccinations.

The following causes were submitted as accounting for the insufficient work of the year. In the *Metropolitan Circles* the chief cause of diminution of inspection work, both of the Superintendent and his Deputies, was the thoroughness with which the villages were protected in former years rendering it difficult to find subjects to be operated on. Moreover, some of the Deputies were new, elderly, and inexperienced men, and the Superintendent was detained in Calcutta for 15 days in the middle of the

season. *Darjiling Circle.*—Attention to special sanitary work, and office work necessitating return to head-quarters are urged by the Superintendent as preventing his performing as much vaccination work as might have been done. In 1882-83 he confined his inspections to the area traversed by the Government agency, but during the year under review he looked after the work of the licensed vaccinators in the districts in the plains, which is more scattered; but to visit only 100 villages in five months and verify 1·83 per cent. of the total number vaccinated, is to exercise merely a nominal control. A declining standard of success in the operations of the vaccinators—85·30 per cent.—followed from this imperfect supervision. *Ranchi Circle.*—The causes with regard to the decline in the Superintendent's work were, having proceeded to the Calcutta Exhibition; people determinedly refusing to produce their children for examination in many places on the pleas of tender age, sickness, jungle to be passed through, rivers to be crossed; and a great amount of time, which could have been bestowed on inspecting vaccinations having been lost in going over much ground extending over the whole circle, as his presence was necessary among the vaccinators owing to the gross misconduct of some of them retarding the progress of work. There was, however, no want of activity and no neglect of duty on the part of this officer. He had many difficulties to contend with. With regard to the Inspectors, it is stated that one of them suffered much from fever which interfered with his work, and to the Native Superintendents, that much of their time was taken up in trying to overcome opposition, and that one of them had supervision over a batch of operators who were very insubordinate and difficult to manage, and several of whom had absconded. The Deputy Superintendent of the *Sonthal Pergunnahs Circle* states that, the reduction in his work was due to breaks in his tour owing to illness and having to perform office work; to overcoming opposition to vaccination—particularly in the new areas in Monghyr; and to his having moved about in the Sonthal Pergunnahs district in suppressing small-pox for a longer time than usual. The Superintendent, however, does not consider this explanation satisfactory. He states that the Deputy Superintendent was this year relieved of a great portion of his usual office work; that it was clear that he displayed great neglect and apathy in his inspection work; that the Monghyr area being compact, he could have visited more villages if he had chosen to do so; and that he lost much time in various ways. With regard to the Inspectors, it is stated that, some of them lost much time in breaking down opposition offered to vaccination, and that others, who were looking after Government vaccinations, were deputed to supervise licensed operations. No explanation has been furnished by the Superintendent of the *Eastern Bengal Circle* with regard to the diminution in inspection work of his subordinates, except that the Deputy Superintendent, having been newly appointed, was inexperienced in his work, and that the area made over to one of the Inspectors, being intersected by rivers and khals, rendered inspection work difficult. The Superintendent of the *Orissa Circle* states that, owing to having spent the greater portion of his time in travelling distant areas between one district and another, a greater amount of inspection work could not be performed by him. No explanation has been furnished with regard to the decrease of work of his subordinates. The Superintendent of Vaccination, *Behar Circle*, in accounting for the decline in inspection work, states that much time was lost in inducing the people in the new areas in Chumparun and Shahabad to accept vaccination; and that the same was the case with his subordinates. Moreover, that he was detained some time in Patna in arranging his men for the protection of certain localities in that district, where small-pox had broken out very severely, and that in some places he had to proceed from village to village twice, and sometimes thrice, as the people could not be induced to present their children for vaccination at one and the same time.

Inspections in Municipalities, &c.

178. There is much reason to believe that, in the great majority of instances, the inspections of the Assistant Surgeons and other subordinate medical officers in charge of vaccination in the towns, dispensaries, &c., and the supervision exercised by them over the work of the vaccinators, are at best fitful and desultory, and that apart from their indifference in the matter it is difficult to get the people to

come to the dispensaries for examination after being vaccinated. The Civil Surgeons are willing, but not quite able, owing to their other duties, to render the active and sustained care that the subject needs; but there is evidence in the Reports indicating that this year more than usual attention was accorded, which resulted in a sensible increase in the number of the operations performed, and much improvement in the quality of the work produced. It is very creditable to Dr. Roy that he had every case of vaccination in the Soori town performed in his presence, and that he initialed the results in the register, and to Dr. Tomes, that he made a house to house visitation in the different sections of the town of Midnapore and in its vicinity, and watched the progress of vaccination in them.

179. *Expenditure incurred for Vaccination, and average Cost of each Successful Operation.*

CIRCLES.	TOTAL COST IN 1883-84.			AVERAGE COST OF EACH SUCCESSFUL CASE.					
				1883-84.			1882-83.		
	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Calcutta	5,108 3 0	......	5,108 3 0	0 9 7⅓	......	0 9 7⅓	0 9 3	......	0 9 3
Metropolitan Circles	.....	37,231 5 9	37,231 5 9	...	0 1 8¾	0 1 8¾	....	0 1 7¾	0 1 7¾
Suburbs of Calcutta	4,878 5 4	....	4,878 5 4	0 6 11⅓	......	0 6 11⅓	0 5 5	.....	0 5 5
TOTAL OF METROPOLITAN CIRCLES...	4,878 5 4	37,231 5 9	42,109 11 1	0 6 11⅓	0 1 8¾	0 1 10¾	0 5 5	0 1 7¾	0 1 10½
Darjiling Circle	989 9 0	22,820 7 8	23,810 0 8	0 1 2	0 1 9½	0 1 8¾	0 4 1	0 0 4	0 1 5¼
Ranchi Circle	11,950 10 8	1,789 1 3	13,739 11 11	0 5 5¾	0 0 8½	0 1 7¾	0 6 7⅓	0 0 4	0 1 10
Sonthal Pergunnahs Circle	7,189 15 3	1,248 0 0	8,437 15 3	0 2 10	0 0 3¾	0 1 3½	0 1 10	0 0 1½	0 0 11¼
Eastern Bengal Circle	10,803 10 3	821 5 0	11,624 15 3	0 1 0⅓	0 0 1	0 0 8	0 1 7¼	0 0 1	0 0 9
Orissa Circle	6,435 11 7	......	6,435 11	0 1 11¾	.... ..	0 1 11¾	0 2 5	......	0 2 5
Behar	8,262 1 8	......	8,262 1 8	0 3 4¾	......	0 3 4¾	0 5 7	......	0 5 7
TOTAL OF VACCINATION CIRCLES ..	58,518 2 9	63,910 3 8	122,428 6 5	0 2 5⅓	0 1 1¾	0 1 6½	0 3 3¾	0 0 10¾	0 1 6¾
Municipalities, Dispensaries, &c. ..	... .	......	8,845 10 11	......	......	0 2 1	......	... ..	0 2 6¾
GRAND TOTAL ..	58,518 2 9	63,910 3 8	1,31,274 1 4	0 2 5⅓	0 1 1¾	0 1 7	0 3 3¾	0 0 10¾	0 1 7¼

Gross Expenditure.

180. The total cost to *Government* for vaccinations performed during the year amounted to Rs. 1,22,428-6-5, and of this expenditure Rs. 58,518-2-9 represents the cost of the operations conducted by the *Government establishment*, and Rs. 63,910-3-8 that of the establishment provided by Government for supervising the operations of the *Licensed vaccinators*. The cost of vaccination to the Municipalities, &c., was Rs. 8,845-10-11. Thus, the entire expenditure on vaccinations—*Government* and *Municipal*—amounted to Rs. 1,31,274-1-4. In comparison with the expenditure incurred for the same purpose in the preceding year the cost of operations by the Government agency was less by Rs. 13,226-15-8, while that by the Licensed agency was in excess by Rs. 19,569-7-10, shewing that on the whole the expenditure in the Vaccination circles had increased by Rs. 6,342-8-2. The Municipal vaccinations also cost more this year, viz. to the extent of Rs. 847-12-8. The whole cost of operations in the entire Vaccination area—*Government* and *Municipal*—consequently, exhibits an increase of Rs. 7,190-4-10 over the expenditure of the preceding year.

Average cost of each Successful Case.

181. The cost of each successful operation performed by the *Government agency* amounted to 2 annas 5⅓ pie, and by the *Licensed agency* to 1 anna 1¾ pie, aggregating 1 anna 6½ pie for both departments. Compared with the average expenditure of the preceding year, there was a decrease of $10\frac{5}{12}$ pie per operation by the *Government agency* with an increase of 3½ pie per case by the *Licensed agency*, resulting in a decrease of ¼ pie for each vaccination performed in the Vaccination circles. The Municipal operations cost 2 annas 1 pie each, against 2 annas 6¾ pie in 1882-83, showing a decrease of 5¾ pie per case. Thus, on the whole, the entire operations of the year—*Government* and *Municipal*—cost ⅓ pie each less than in the preceding year. In the Vaccination circles, individually considered, the cost per case varied, ranging be- between 9 annas 7⅓ pie in Calcutta and 8 pie in the Eastern Bengal Circle. The cost of operations in the Suburbs of Calcutta and in the Behar Circle also preponderated much over that of the other circles, being 6 annas 11⅓ pie per case in the former and 3 annas 4¾ pie per case in the latter. The extent

of the increase or decrease in cost per case in each Circle, as compared with the results of 1882-83, is shown in the margin. The most creditable reduction in cost per case was attained in the Behar Circle, while the highest excess of expenditure per case was incurred in the Suburbs of Calcutta.

	Difference per case in 1883-84 A. P.		Difference per case in 1883-84. A. P.
Calcutta	0 4⅓ I	Sonthal Pergunnahs Circle	0 3$\frac{11}{13}$ I
Suburbs of Calcutta	1 6⅓ I	Eastern Bengal Circle	0 1 D
Metropolitan Circles	0 1 I	Orissa Circle ...	0 5¼ D
Darjiling Circle ...	0 3$\frac{7}{12}$ I	Behar " ...	2 2¼ D
Ranchi " ...	0 2¼ D		

182. In addition to the regular expenditure incurred for vaccination, as set forth in the foregoing table, the following contributions were made in aid of the work:—

Contributions in aid of Vaccination Work.

Rs. 82-10-6 for two vaccinators entertained by Government for the interior of the Chittagong district.

Rs. 103-5-4 paid to a vaccinator employed by Government for vaccinating the Khas Mehal Estates of Angul and Basipara in Cuttack.

Rs. 43-5-4 paid from the Cantonment fund to a vaccinator for carrying on operations in the Dinapore Cantonment in Patna.

Rs. 64-14-0 paid from the Cantonment fund to two vaccinators for carrying on operations in the Dum-Dum and Barrackpore Cantonments in the 24-Pergunnahs.

Rs. 30-0-0 paid for operations performed in the Tajpore dispensary in Durbhanga from the Dispensary fund.

Rs. 50-0-0 paid for operations carried on in the Soorsund dispensary in Mozufferpore from the Dispensary fund.

Rs. 15-8-3 paid by the Railway authorities to a vaccinator for vaccinating the employés on the line of the Northern Bengal State Railway from Sara to Silliguri.

Rs. 200-0-0 paid for four vaccinators entertained by the Rajah of Hutwa for carrying on operations in the Hutwa, Gopalgunge and Bhori dispensaries in Sarun.

Rs. 55-2-6 paid by the Rajah of Durbhanga to a vaccinator for operations carried on in the Naraya dispensary in Durbhanga.

Rs. 60-0-0, being the cost of one of the two vaccinators employed in the Durbhanga Municipality, paid by the Rajah of Durbhanga.

Rs. 26-13-6 paid to a vaccinator for operations in the Chuckdighi dispensary in Burdwan by the Estate of Baboo Lolit Mohun Rai, proprietor of that dispensary.

Operations were also carried on at the Kurnafuli and Udalia Tea Estates in Chittagong by the native doctors attached to those Estates. The amounts paid to them have not been stated.

183. The Superintendent of the *Metropolitan Circles* has submitted no explanation as to the cause of the increase in the cost of each successful case in his circle. On the contrary, he states that, the cost of each operation in the Suburbs of Calcutta is less. Nevertheless, it is apparent that the increase is due, to some extent, to the expense of the establishment having to be distributed over a reduced number of operations. In the *Darjiling Circle* the increase was due to the entertainment of an additional clerk and of four Inspectors of licensed vaccinations, and to the Superintendent having been paid travelling allowance at a much higher rate under the new Travelling Allowance Code than he used to receive under the old rules. In the *Sonthal Pergunnahs Circle* the pay of the Civil Surgeon's clerk was increased; a portion of the vaccination establishment was retained during the recess on higher allowances than sanctioned for them for that period, in order to suppress small-pox in the Bhagulpore, Monghyr and Sonthal Pergunnahs districts; and the four Inspectors, sanctioned for this circle, were continued on the roll of the establishment during the whole of the year under review, while they were entertained from only October in 1882-83. The enhanced expenditure involved by these arrangements being distributed over a smaller number of successful operations, accounts for the higher cost per case.

Explanations accounting for increase of cost of operations.

184. In *Calcutta* vaccination is received willingly by all except the up-country people, whose resistance, however, is diminishing year by year. This year the lower class of this community resorted to the vaccine stations, and several respectable Marwari and Khettri families were induced to accept vaccination.

Attitude of the people towards Vaccination.

In the *Metropolitan* Circles the Hindus as a class and the ordinary Mussulmans accept vaccination readily, but of the former the *Itcha* (dependants on the wishes of Shitola, the goddess of small-pox) families, and of the latter the Ferazees resist it. The number of the former is diminishing every year. In the Raniguuge town in Burdwan, notwithstanding that the Compulsory Vaccination Act was introduced into it, most of the Marwaris could not be induced to accept vaccination. It is intended to enforce the law more vigorously. In the town of Burdwan a colony of confectioners, called moiras, give most trouble, but during this year considerable progress was made among them. The people in the Leakbund village in thannah Bishenpore objected to vaccination, because the first child operated upon died. In Bankura, the feeling of dissatisfaction hitherto evinced by the educated classes and the up-country traders has died out, and they now offer their children for vaccination. In mohullas Idza and Kotowali, in the town of Bankura, vaccination was persistently refused, but the difficulty was overcome. In the Birbhum district the Ferazees of Nulhati offered, as usual, determined resistance, and the vaccinators complained of being unable to realize their fees, particularly from the Mahomedans; the up-country people and the Marwaris are the stoutest opposers; and the Hindu villagers are led by the headmen; but in general there is no active opposition. The people, however, postpone the measure to suit their convenience till they are overtaken by small-pox, and even then refuse it. Dr. Roy writes strongly on this subject. He says: "This refusal at a time when the disease is imminent is, I consider, criminal, and to be treated as such. Some legal measure should be devised to meet this obstinacy. The Government should use its own discretion in enforcing laws for the common weal of its subjects, and the Compulsory Vaccination Act should be introduced all over the country without waiting to sacrifice lives for the development of knowledge and intelligence." In Tumlook, in Midnapore, objection is taken to virus being taken from the arms of children. In the Midnapore town passive opposition exists among the shop-keeper class, who sometimes give much trouble. In the Hughli district the people appear to have overcome their prejudices against vaccination, and to have learnt its benefits. In Serampore it is only objected to during months of mourning, or when a child is born, or when there is sickness. These are considered inauspicious times; but they recur too often. *24-Pergunnahs.*—At Dum-Dum there is much concealment and evasion. In the cantonment it is refused chiefly by the lower castes and Hindus. The same is the case in the South Barrackpore Cantonment. In the Naihatti and Baraset towns inoculation is considered superior; but in Baranagore and Baraset the people are eager, and voluntarily ask for vaccination. In Jessore the orthodox Hindus prefer inoculation. In Murshidabad the Jains and Ferazees obstinately resist vaccination: the Hindus and ordinary Mahomedans appreciate it. In the *Suburbs of Calcutta* some of the up-country people exhibit hostility, and sometimes give much trouble, and the lower classes of Hindus and Mahomedans do not come forward readily to receive vaccination. A notable instance of conversion to the measure this year was Babu Dinobundo Nundy, the zemindar of Polassi. For years past vaccination could not be introduced into this and the adjoining villages of Bashda and Dingol, owing to opposition offered by this zemindar. In 1882-83 Dr. Gupta wrote to him explaining the benefits of vaccination, and requesting his aid in propagating it, but he would not be persuaded. This year one of his children having been attacked by small-pox during an outbreak of the disease in these villages, he, through fear lest his other children might catch the contagion, had them all vaccinated, and his example was followed by his villagers and tenants; and thus these villages were thoroughly protected.

In the *Darjiling* Circle vaccination is generally appreciated; but here and there some opposition was met with, which generally gave way to the persuasions of the district officers. In Dinagepore the lower orders, whether

Mahomedans or Hindus or other classes, oppose vaccination, partly owing to ignorance and partly on the plea of previous illness. In Rajshahye the Hindus, chiefly the Brahmins, resist the measure, but passively. In the Rungpore town lukewarmness is evinced, but the presence of small-pox checks this feeling. In Maldah, although no determined opposition was offered, the feeling of the people is one of suspicion; but they are gradually yielding under conciliation. They object to the measure during the month of Pous (December), or when a female member of the family is pregnant. The educated, however, appreciate it. In Bogra it is greatly appreciated generally, but some delay the operation under the pleas of sickness, inauspicious days, &c. In the Darjiling town the Mahomedans resist, but the hill people—Bhootias, Lepchas and Nepalese—have no inherent objection to the measure. In Purneah the intelligent and influential classes are not in favour of it, and have themselves inoculated.

In the *Ranchi* Circle no disposition to receive vaccination is shewn by the people in the Kolhan in Singbhum. Some of them do not believe in the efficacy of vaccination. It is difficult to obtain success in vaccination owing to the people refusing to allow arm-to-arm vaccination, and those who, in consequence, were unsuccessfully vaccinated, resisted to the utmost all endeavours to repeat the operation. On this point the Deputy Commissioner reports, that in the beginning of this year, during an epidemic of small-pox, many persons already protected by vaccination or inoculation, and persons who had had the disease, were attacked by it, and several died; that this shook the faith of the people in vaccination which they were beginning to have; and that no amount of argument or explanation by him, during his tour, was of avail to disabuse their mind of the inefficiency and nullity of the measure. It is found that if the people bend to the measure at all, it is when a Brahmin offers them vaccination after performing a poojah or worship over the child. In the other parts of Singbhum the prophylactic is taken without objection. In the Lohardugga district the attitude of the people towards vaccination is very good. They however endeavour to postpone it on some plea or other. The aborigines (Ooraons and Mundas) readily take vaccination, and the Brahmins, Rajpoots, and Bunyas would not accept it were they not afraid to resist it. In Manbhum the people were not very much opposed to vaccination. In Hazaribagh the attitute of the people varies in the different thanahs, but generally strong opposition is offered by the Brahmins, Rajpoots, Kayesthas, Bunyas and Marwaries. The last named community, residing in Jhalda, Purulia and Raghunathpore, are stated to have evinced so strong a disposition not to accept vaccination that the Deputy Superintendent was unable to vaccinate any of them, even when small-pox was prevalent. In the Tributary States the people are willing to take vaccination if they are not interfered with by the Rajahs, who, it appears, dislike the measure because they cannot realize under it the income which they used to derive when inoculation was in vogue. In general the people object to arm-to-arm vaccination; to the employment of crusts; to virus being taken from the arms of their children, on the plea that the procedure weakens them; to being vaccinated in the hot weather, as they fear that ulcers will follow the operation; on days other than Tuesdays and Saturdays, for some religious reason; or during the "Chait festival" in January and the "Sooraj festival" in February; when drunk, which they often are, and then they are unmanageable. The zemindars who prominently opposed vaccination were Bhupat Sing of Garadi, Tikait Mongul Sing of Kesko, Modorai of Chungagurh, Muner Ram of Gaza Salem, and Kanoo Purganait and Janki Sai (the head of the Bunyas) of Dumri. The Rajahs of Jashpur and Bonai also resisted vaccination. The former, previously to the arrival of the operators, issued a proclamation by beat of drum, ordering the people not to take vaccination, and that he would personally inflict 12 stripes on any one who disobeyed the order. He, however, on receiving the Commissioner's perwanah, allowed vaccination to be proceeded with; but the perwanah had no effect on the Rajah of Bonai, and consequently no work was done in his State.

In the *Sonthal Pergunnahs* Circle vaccination is generally appreciated, except by the high class Hindus—Brahmins, Rajpoots, &c. There was no resistance met with in Bhagulpore, excepting in the Supul and Sudder subdivisions, the most determined opposer being Manick Chand Shaw, zemindar

of Borbonna, thanah Kolgong, who would not allow his children to be vaccinated, and presented great difficulty in the way of the vaccinators in operating on the people in his village. In the Sonthal Pergunnahs district, the Kheowar Sonthals were very obstinate and hostile, and the Islams, a class of Mahomedans, resisted it, but subsequently gave in. In the thanahs in Monghyr taken up this year the attitude of the people was not favourable. The Rajpoots and Jamida Brahmins, who form a leading portion of the population, displayed much hostility, being distrustful and suspicious of vaccination, and the wealthy classes, who are very conservative in their prejudices and backward in receiving new theories, also exhibited some resistance. The most notable opposers were the punchayets in Rotunpore in thanah Monghyr and of Kalianpore in thanah Kharakpur, and the people in Shosharpur and Shetpur in thanah Gogri.

In the *Eastern Bengal* Circle the great bulk of the people accept vaccination, though passively; but the ignorant and bigotted Hindus and Mahomedans of the Ferazee sect object to it. In the Dacca town the latter community paid the penalty of resistance during a rather severe outbreak of small-pox in their midst. In Backergunge the Mahomedans are averse to vaccination on religious grounds; the educated Hindus prefer it; but the uneducated submit to it only under pressure. In Chittagong the same feeling obtains, excepting when small-pox prevails epidemically; and some prefer to have small-pox naturally. In Noakhali, where a systematic beginning in vaccination was made this year, the measure was at first much impeded by the resistance offered to it, chiefly by some of the Mahomedans, on religious grounds, in which they were encouraged by the leading members of their community. But their prejudices were to a great extent removed, by explaining to them the object the Government had in introducing vaccination; by informing them that Government would bear the cost of the measure and they were not required to pay anything; and by reading to them futwas procured from the chief Mahomedan priests in Sudharam and Bamni, declaring that there was no harm in accepting vaccination. With regard to the rest of the people, the Magistrate says that the willingness with which vaccination was accepted by them is very satisfactory and encouraging. They appear to recognize the benefits of the prophylactic and its superiority to inoculation, and consider the introduction of the measure a benevolent action on the part of Government. In some instances there is hesitation (which is generally removed) because the process has to be repeated for keeping up its protective powers, and in other the scruples are traceable to the influence of the female members of the family, who are extremely conservative, the men, in most cases, feeling a difficulty in going against their wishes. But, on the whole, the ease with which the scheme was carried out makes the Magistrate hope that it may be further extended during the next working season.

In the *Orissa* Circle vaccination is generally resisted by those who are ignorant of its nature and benefits; but a large number of the higher and educated classes, who ought to be aware of the advantages of the measure, prefer inoculation, their indifference only giving way when they hear of the prevalence of small-pox; and it is then that they apply for the preventive. In Cuttack the people being aware that vaccination is not compulsory, bid defiance to the vaccinators, who have often to put up with a good deal of obloquy and insult in their endeavours to persuade the people to accept the measure.

In the *Behar* Circle, while the Mahomedans evince no great disinclination to vaccination, the Hindus, chiefly the Brahmins and Rajpoots, strongly oppose it. The latter doubt the protective powers of the prophylactic owing to no eruption following the operation, as is the case in inoculation, and they still labour under the idea that vaccination will entail fresh taxation. In Patna, opposition to vaccination is gradually dying out. In some cases application for it is voluntarily made; but the ignorant and superstitious, particularly in the northern parts of the Behar sub-division, hide their children from the vaccinators in order that they may not offend the goddess of small-pox—Mata Mai—and wish that they may get small-pox spontaneously when it pleases this deity. In Gya the Mahomedans appreciate the measure, but the wealthier classes view it with feelings of aversion, and are hostile to it, particularly the priests in the old town of Gya who discourage it by every means in

their power. In Shahabad the opposition is very great. The Mahomedans are less prejudiced than the Hindus, and of the latter, the lower classes, such as Ahirs, Domes, Chamars, object most. A great deal of small-pox being present in many places, the Magistrate repeatedly urged the people to take this opportunity to be vaccinated, pointing out the example of the Rajah of Dumraon and his family, who had all been vaccinated. He is not able to say that he met with much success. In Mozufferpore the better classes, both Hindus and Mahomedans, in common with the poor and ignorant, are averse to vaccination. In the Mozufferpore town the hostility generally is so great that the Civil Surgeon considers that the feeble vaccinating agency employed is never likely to combat it successfully. From Durbhanga the report is, that vaccination is "not yet appreciated by the people, as they have not yet shaken off their prejudices against vaccination, as education is very behindhand in Behar." Very great and marked reluctance exists among the Hindus and Mahomedans equally. In the town of Durbhanga opposition is exhibited in spite of the compulsory law being in force, inoculation being preferred. In Sarun, people of all religions are so prejudiced and stubborn, that the Civil Surgeon does not expect to see vaccination flourish in this district. No native, high or low, rich or poor, ever comes forward voluntarily to ask for the prophylactic for himself or family. He only puts up with the operation as it were, and submits to it, and it is quite impossible by any amount of explanation to engender a desire for its universal adoption. A certain amount of pressure has to be exercised on them, or there would be no vaccination at all. The Magistrate believes that the wide-spread outbreak of small-pox during the last four months will lead to more recourse being had to the prophylactic by the agrarian population in future. In Chumparun the measure is opposed to a great extent. In the Motihari town high caste Hindus and shop-keepers are, as a rule, averse to vaccination. The Mahomedans, the "Bengali Babu," and some poorer classes appreciate it.

Thus it will be seen that, while opposition to vaccination is still exhibited in every circle, a healthier view of the measure is continuing to gain ground. On the whole, the most backward districts are Hazaribagh, the Kolhan portion of Singbhum, Monghyr, and the districts comprising the Behar and Orissa Circles, excepting Patna in the former circle; the stoutest opponents are the higher classes of Hindus, the Marwaris, and the Mahomedan Ferazees; and the chief causes of aversion to the measure are objections based on religious grounds; leading members of communities setting a bad example and inciting the lower classes to resistance; the females having a strong objection to the measure, while the males are unable to set aside their entreaties; unwillingness to part with virus from the arm; objection to arm-to-arm vaccination; bad vaccination engendering disbelief in the protective powers of the prophylactic. It is believed in several places that if vaccination is performed with the religious ceremonies and rites customarily adopted when performing inoculation, it would be received with favour more generally; but to do so would be a great mistake.

Local and other aid in promoting Vaccination obtained during the year.

185. The information under this head, gathered from the reports, is subjoined:—In the *Metropolitan* circles the magisterial and Police officers of several districts, particularly Mr. Anderson, the Magistrate of Bankura, rendered much assistance to the cause of vaccination; and contrary to past experience, the Police officers in the Suburbs of Calcutta aided the vaccinating staff materially. In the North and South Dum-Dum Municipalities one of the Municipal Commissioners accompanied the vaccinator when performing operations, and exercised his influence wherever it was needed, and in the North and South Barrackpore Municipalities the Municipal Commissioners inspected the work of the vaccinators. These are the only instances on record in which Municipal Commissioners took an active part in promoting vaccination. In the *Darjiling* Circle assistance was given by almost every one applied to, including the Managers of tea gardens, except the Managers of the Bannockburn and Alibong tea gardens who raised objection to vaccination during the plucking season. In the *Sonthal Pergunnahs* Circle the Magistrate of Bhagulpore rendered valuable assistance in suppressing small-pox in thanahs Sultangunge, Kolgong and Bhagulpore; the Sub-Divisional

Officer of Jamui promoted vaccination to the best of his ability; the Manager of Rajah Leelanund Sing in thanah Kharakpur caused vaccination to be carried on in the zemindary; and Mr. Craven, Sub Divisional Officer of Godda, broke down the opposition of the Kheowar Sonthals and the Brahmins of the place. In the *Ranchi* Circle Major Garbet, the Deputy Commissioner of Singbhum, and Mr. Power, the Deputy Commissioner, and Mr. Mackie, the Officiating Deputy Commissioner of Lohardugga, rendered much assistance in promoting vaccination and in overcoming opposition. The Commissioner of Chota Nagpore was the means of setting vaccination going when it had come to a standstill in the Native States. The Police also rendered aid, particularly Inspector Mahendi Hossein and his Sub-Inspector. The Superintendent of Vaccination, *Eastern Bengal* Circle, reports that no cordial help was accorded to vaccination by any one except the Civil Surgeon of Pubna, the Magistrate of Noakhalli, and the sub-divisional officers of Jamalpore and Serajgunge. "It was the 'cold shoulder' everywhere. The Joint-Magistrate (sub-divisional officer) of Serajgunge being well disposed towards vaccination, issued orders *helpful* to the cause. He left on tour, and his *locum tenens*, Babu Purna Chandra Mitra—strange to say—*undid* the work of the Joint-Magistrate by issuing *new* orders, that it was *optional* for the people to receive vaccination or not. Of course vaccination was declined." The Magistrates of Cuttack, Balasore and Puri, although asked, declined to render assistance, on the ground that vaccination is not compulsory. The Police consequently received no instructions. In the *Behar* Circle, Babu Jugdeo Sivha, zemindar of Bhudwoe in thanah Arrah, had his own children vaccinated, and thereby set an example to the people in his zemindary, who after this readily accepted the prophylactic. The Police officers are stated to have been indifferent in the matter generally, conspicuously the Sub-Inspector of Dhookee in Chumparun, to whom is referred the non-progress of vaccination in his jurisdiction. The Civil Surgeon of Durbhanga remarks that active assistance for promoting vaccination in the town was applied for, but could not be given by the local Magisterial and Police authorities, *first*, because such aid would be compulsory and therefore illegal, and, *secondly*, because the Police element, which must be introduced, would afford an opening for bribery, and he very appositely adds that, "the aid of these authorities may therefore be considered as moral only, and that was given freely, but it did not lead many people to be vaccinated."

Extension of Compulsory Vaccination Act.

186. The Compulsory Vaccination Law, Act V (B.C.) of 1880, was brought into operation during the year under review into the 55 Municipalities, four Cantonments, and four Rural circles named below:—

Burdwan District.	Bydobatti town.	Basirhat town.	Chanduria town.
Burdwan town.	Kotrung „	Taki „	Debhata „
Raniguuge town.	Serampore „	Baduria „	*Murshidabad District.*
Kalna „	Utterpara „	Gobardanga „	Berhampore town, including Cantonment.
Dainhat „	*24-Pergunnahs District.*	*Nuddea District.*	
Cutwa „	North Suburban or Baranagur town.	Krishnagar town.	Lalbagh town
Bankura District.		Santipore „	Kandi „
Bankura town.	South Suburban town.	Ranaghat „	Jangipore „
Bishenpore „	Rajpore „	Nuddea „	*Maldah District.*
Midnapore District.	Barripore „	Kushtia „	English Bazar town.
Midnapore town.	Joynagar „	Meherpore „	*Cuttack District.*
Kheerpai „	South Dum-Dum „	Birnaggar „	Cuttack Cantonment.
Ghatal „	North ditto „ including Cantonment.	Kumarkholli „	*Bhagulpore District.*
Chundrakona „		*Jessore District.*	Bhagulpore town.
Ramjibanpore town.	South Barrackpore town, including Cantonment.	Jessore town.	Kolgong „
Tumlook „		Mohespore „	Bhagulpore thanah.
Hughli District.	North Barrackpore town.	Kotchandpore „	Kumargunge „
Bhuddesher town.	Baraset town.	*Khulna District.*	Kolgong „
Bansbaria „	Naihati „	Satkhira town.	Bihipore „

Thus, the law was, up to the close of 1883-84, in force in 77 places. Both the Magistrate and the Civil Medical officer of Dinagepore advocate its introduction into the Dinagepore Municipality, in order to meet the opposition to vaccination by the lower classes of the people; and also all over the district, if complete vaccination is aimed at. Similarly, the Civil Surgeon of Chumparun thinks that it is desirable to extend the same measure to the towns of Motihari and Bettiah; and the Civil Surgeons of Chittagong and Cuttack reiterate their opinions on the necessity of utilizing the law in their towns,

the latter officer stating that now the majority of the Municipal Commissioners have no objection to the proposition. The Superintendent of Vaccination, Ranchi Circle, recommends the extension of the law to the Hazaribagh town, where there are many European inhabitants, and where the people themselves say that they will not accept of vaccination, because it is not compulsory.

Administrative details connected with the working of Act.

187. The administrative details connected with the working of the Act were, *mutatis mutandis*, identical in all the places into which it was brought into operation, *i.e.*, vaccine stations, suited to requirements, were established; dates and hours for carrying on the operations fixed; vaccinators, sufficient in number, appointed; publicity given by beat of drum, placards, &c., that the law is in force, and what are its requirements and the obligations of the people under it, &c. The following observations, therefore, relate only to the attitude exhibited by the people towards the introduction of the enactment, the steps which were adopted to enforce its provisions, the results of the measure; and to other cognate matters.

Law how worked in Towns into which it was introduced this year.

188. Taking up first the Towns or Areas to which the Act was extended this year, we find that in *Burdwan* it was favourably received in all its five Towns into which it was introduced, expecting Ranigunge, where the Marwaris objected to have their children vaccinated in spite of the powers conferred by the Act for compelling compliance. These powers will, it is said, be more rigorously enforced in future. Operations were carried on in the vaccine stations, and calls for home vaccinations were also attended to. In the two Towns in *Bankura* the Act was received without opposition, and was worked smoothly. In *Midnapore* effect could not be given to the law during this year in Kheerpai and Ramjibanpore for want of "lymph and other materials." Much unwillingness and opposition were met with at Chundrakona, less at Tumlook, none at Ghatal. In the last named town, however, great aversion was exhibited by parents to lymph being taken from their childrens' arms, and in Tumlook it was observed that protection by previous vaccination, inoculation and small-pox was general. In the Midnapore town there was more indifference than active opposition to the measure, and this resulted in no one resorting to the stations to be vaccinated. The vaccinators were, therefore, directed to remain one hour at their stations, and then to make a house to house visitation during the remainder of their time, taking with them vaccinifers, and to offer to vaccinate gratuitously, informing the people at the same time that they have to attend at the stations, and what were their liabilities under the law. The Civil Surgeon also visited the stations. As still no satisfactory progress was made, the provisions of the law were enforced, notices served, and some of those who persisted in not having their children vaccinated, prosecuted and either fined or warned. These measures effected great improvement, for while only 64 operations were performed in March, 300 were effected up to the 20th April, the date of report. The Civil Surgeon observes correctly, that time, patience and perseverance are required to bring the Act into complete working order and break down the long established house to house optional method, and that birth registration will have to become very much more perfect before the Act can be carried out in its entirety. Home vaccinations were carried on in Ghatal and Midnapore towards the end of the year, and realized Rs. 28-4 in the former town and Rs. 10-12 in the latter. The Civil Surgeon considers the Vaccination Act defective. "It might reasonably be supposed," he writes, "from its title that the Compulsory Vaccination Act where in force would afford in the Municipality full and efficient power to promptly stamp out any outbreak so soon as a single case of small-pox appeared, but I am disappointed to find that it is perfectly powerless to do anything of the kind. For the proper protection of an affected area it is absolutely necessary, in the first place, to find out all the unprotected persons living therein, and then to vaccinate them forthwith until an eccentrically widening zone of protection is established around it. The Act makes no provision for the supplying of correct information, house-holders are under no compulsion to report correctly, and it is well known that among the ignorant classes, when once small-pox has appeared in a family, the members for the time become averse to vaccination. The goddess Sitola has arrived and must not be interfered with; they will even

resent enquiry, and will purposely give false information. This I have experienced myself in one instance, and in another a policeman making enquiries about small-pox was set on and beaten. Again, when unprotected persons are discovered, or are already known, if these are infants under 12 months, their vaccination cannot be enforced until they are a year old; if adults, the law allows them 15 days extension of 'unprotection' before they are liable under penalty. Under these circumstances the Municipality is no better off as regards the extinction of an epidemic of small-pox with the Act than it was without it." In *Hughli* the law is reported to have worked satisfactorily in all its six Towns into which it was introduced this year, and the people generally offered no objection to have their children vaccinated. In *Serampore* it was not deemed advisable, in this the first year of its introduction, to enforce generally the provisions of the law requiring the payment of fees for home vaccinations, as people, it was found, would not sometimes resort to the vaccine stations to be vaccinated. This was particularly necessary in the mills at Champdanni and in Rishra, as they form convenient centres for the preservation of lymph and furnishing of vaccinifers for home vaccinations. In the *24-Pergunnahs* the law was brought into operation in all its 15 Municipalities and two Cantonments from the beginning of the working season. It was received by the people without objection; but the Cantonment Magistrate of Dum-Dum says, that no practical advantage was derived by the introduction of the law as it stands, for the following reasons:—"Under section 30 no offences under the Act can be prosecuted without the authority of the Lieutenant-Governor or Superintendent of Vaccination. No prosecutions have been sanctioned or instituted, although the vaccinator has complained to me that there are several parents who have refused to permit their children to be vaccinated, and there are, without doubt, very large numbers of unprotected children who have not been produced for vaccination. It would, in my opinion, be desirable [the Magistrate agrees with the recommendation] that the vaccinator's complaints should be cognizable by the Magistrate without reference to further authority. As it is, the vaccinator has informed me that he has reported several cases for authority to prosecute, but without result, and the law has, therefore, remained up to the present time a dead letter. The number of infants under one year of age who were vaccinated were 16 in South Dum-Dum, 12 in North Dum-Dum and 6 in the Cantonment, giving a total of 34 for a population of over 20,000. The birth-rate is unknown, but putting it as low as 15 per 1,000, it would appear that only about 11 per cent. of the children born have been vaccinated. This is not a satisfactory conclusion, and better results could be obtained if the working of the Act were made more practicable." The law is said to have been received without opposition in the 8 Municipalities in *Nuddea* into which it was introduced, except by the Marwaris in Kushtia. But its requirements have been explained to them and, if necessary, it will be enforced to break down their opposition. The report from *Murshidabad* is that, vaccination was performed gratis at all the vaccine stations in the four Municipalities into which the law was brought into operation, and that for home vaccinations a fee of four annas per case was charged. In the *Bhagulpore* district the Act was brought into operation in February 1881 into the Sudder sub-division, comprising thanahs Bhagulpore, Kumargunge, Kolgong and Bihipore, including the Municipalities of Bhagulpore and Kolgong. This is the first instance of the introduction of the Act into Rural areas. Additional vaccinators were engaged and stationed one at each outpost, and a head vaccinator was appointed to supervise their work; and the ryots were made aware of their obligations under the law by beat of drum. They did not, however, take their children to the stations for vaccination, and the vaccinators were obliged to go from house to house, as before, to carry on the work. As, however, the Act allows 12 months time within which operations may be performed, it could not be fully enforced this year. In the *English Bazar* town in Maldah there was some resistance exhibited, and several notices had to be served in consequence, and in one case a prosecution was instituted resulting in the party consenting to be vaccinated in his house. In the *Cuttack Cantonment*, which includes one of the populous sections of the town, where many native merchants and other influential people reside, the law is said to have been received without much

objection. No information as to the working of the Act in the Municipalities in the *Khulna* and *Jessore* districts has been received.

189. The following reports were received with regard to the Towns in which the law had previously been in force. In *Calcutta* the provisions of the Act were carefully carried out. The parents or guardians of 5,691 children having failed to produce satisfactory certificates showing that their children had been vaccinated, the cases were inquired into, and 3,119 of this number were vaccinated, 573 were found to be ill and vaccination in their cases postponed, 1,142 were stated to have left the town, 218 had died, three had previous attacks of natural small-pox, 630 could not be traced, and 6 were prosecuted, but received vaccination under orders of the Magistrate. The best evidence of the satisfactory working of the law, and of the willingness of the people to receive the prophylactic, is seen in the steady increase of station vaccinations year by year. This year the number of persons vaccinated at the stations amounted to 5,454, or at 57·18 per cent. of the entire number vaccinated, as opposed to 44·81 per cent. in the preceding year. The home vaccinations came to 1,524, or 15·97 per cent. against 12·23 per cent., and bustee vaccination to 2,560, or 26·85 per cent. against 42·94 per cent. The percentage of the latter class of vaccinations would have been smaller but for the prevalence of small-pox. The fees realized for home vaccinations amounted to Rs. 381 against Rs. 348 in 1882-83. In the *Suburbs of Calcutta*, all classes of the people, excluding the up-country men, receive the law favourably, the upper classes of Hindus and Mahomedans appreciating it. Great difficulty, it is again reported, was experienced in enforcing the payment of fees for home vaccinations, owing to no provision existing in the Compulsory Vaccination Act to compel this payment, and thus much of the time of the vaccinators, which could have been given to operations, is lost in endeavouring to collect the fees for remittance to the Municipality. With regard to this subject, viz., the difficulty of realizing fees, but with reference to the licensed vaccinators in the Bankura district, Dr. Ghose submits that, considering the fact that the apathy of the natives with regard to sanitation and preventive medicine is very great, so much so that they would rather leave their children unprotected than go out of their way to have them vaccinated, although the whole of the population of the district has been protected by the Government agency, still, unless the licensed vaccinators are provided with the means of compelling the payment of their fees, and also of enforcing vaccination, a large population will grow up unprotected in the course of years. As a remedy for this, he suggests that if the application of the Compulsory Vaccination Act to the rural population be considered too severe, or not workable under the present system of village administration, a simple law should be devised to be worked by the village Police. In the *Soori* Town in Birbhum the Act continued to work satisfactorily and well, as is evidenced by the absence of small-pox since it come into operation, now two years. The notices which were issued were in all cases complied with without the necessity for prosecution. It was, however, noticed that the people postponed operations to suit there own time and convenience. In the *Hughli and Chinsurah* Municipality the law is said to have continued to work satisfactorily. The operations are carried on under the supervision of the Civil Surgeon, who is supplied with a copy of the register of births. The vaccinators go to the houses of the children indicated in the register, and request their parents or guardians to carry them to the nearest vaccine station to be vaccinated. Those who neglect to do so are, after a warning, served with notices, and if they still do not comply with the requirements of the law, proceedings are taken against them. But this, as a rule, is not necessary. The Civil Surgeon visits the vaccine stations periodically and tests the correctness of the registers kept up in them by comparing the entries with the children vaccinated. In the *Howrah* Municipality the law continued to work satisfactorily, except that the Behari coolies in the jute and cotton mills had not given up their dislike to the arrangement, and that the Mahomedans, chiefly of the lower classes, and one or two well-to-do and educated Hindustani zemindars, refused to take the prophylactic. Notices were served, and the opposition was checked. Eight hundred and thirteen persons resorted to the depôts for vaccination, and 4,734 were operated on in their homes, Rs. 315 being realized on the latter account. In some cases the fees were not paid, and many poor but res-

Law how worked in Towns into which it was introduced previously.

pectable women, unable to attend at the depôts, were vaccinated gratis at their houses. In the *Beauleah* Municipality in Rajshahye the Act continued to work remarkably well, but a few notices, resulting in compliance with their requirements, had to be served, chiefly on Hindus. Home vaccinations, on payment of the usual fee, were also carried on. In the *Rungpore* Town also the law continued to work satisfactorily. The usual station and home vaccinations were carried on. The assistance rendered by the Magistrate and the Police, and the publicity given to the law, ensured the attendance of the unprotected children at the vaccine stations, and the additional operations conducted by the Civil Surgeon and Civil Hospital Assistant produced a satisfactory result. The vaccinated children are assembled at the dispensary on the seventh day after operation, and inspected by the Civil Surgeon. In the *Bogra* Town the law continued to work satisfactorily, there being no complaints. In the *Pubna* Town the operations are carried on under the supervision of the Superintendent of the Eastern Bengal Circle; but the Civil Surgeon is of opinion that if the law is worked by the Municipal Commissioners themselves, the great opposition offered to vaccination, chiefly by influential persons, will give way. In the *Gya* Town the law was received with aversion and opposition, chiefly by the Hindus, of whom the wealthy class and the priests of the old town of Gya were the most determined opponents. The Mahomedans exhibited a better spirit. Six hundered persons were prosecuted for resistance, and 36 of this number were fined Rs. 105-8 and the others warned and directed to have their children vaccinated, which order they carried out. On the whole, however, the working of the law is progressing steadily, and the increase in the vaccinations of the year is said to be due to its operation. In addition to depôt vaccinations, home vaccinations were also carried on, which realized a fee of Rs. 153-4-0. In the Towns of *Monghyr* and *Jamalpore* the law continued to be worked satisfactorily, but yet 36 persons, chiefly the well-to-do, notably the Marwaris, were prosecuted for resistance, and fined one rupee each, which had a very good effect on the rest of the people. On the whole, the advantages of vaccination are beginning to be understood in those towns. The home vaccinations realized Rs. 111-8 in Monghyr and Rs. 25-8 in Jamalpore.

Outturn of operations under the working of the Act.

190. The returns for 1883-84 from the above named Municipalities and other Areas into which the Compulsory Vaccination Act was introduced during past and present years indicate that on the whole there was an increase in the number of vaccinations performed, to the extent of 5,369, and that of the primary operations 97·01 per cent. proved successful and of the secondary 29·14 per cent. This progress, in the initial stage of the working of the law, is satisfactory.

Particulars regarding Inoculation.

191. Act IV (B.C.) of 1865, prohibiting the practice of inoculation, was extended during the year to thanahs Brahmanberia, Nabinagar, Moradnagar, Kotwali and Chandina in *Tipperah*; to thanahs Silao, Attaserai and Behar, (excluding the town in which the law was in force) in *Patna*; to thanahs Arrah and Belauti in *Shahabad*; to thanahs Adapore, Dhaka and Motihari in *Chumparun*; to thanah Jehanabad in *Gya*; and to thanahs Sudharam and Bamni in *Noakhalli*. Preliminary steps were also taken for the introduction of the law into the rest of the thanahs in *Patna* in which it is not in force.

The above law is in force throughout the *Metropolitan* circles. The Magistrate, however, states that inoculation is still practised clandestinely, but to a small extent, in *Midnapore*, the home of the inoculations being in thanah Sabang in this district. Suspicion of similar practice attaches itself also to the *Murshidabad* district. In the *Darjiling* Circle also the law is in force and observed throughout, excepting that it is suspected that it is infringed clandestinely in some parts of Maldah. Inoculation is practised freely in the parts of Nepaul bordering on the Darjiling district, and to a less extent in Sikkim and Bhootan, whence small-pox is introduced into this circle, and thus counteracts, in some measure, the protection afforded to it. In the *Ranchi* Circle inoculation, which is prohibited throughout, is not known to be practised. In the *Sonthal Pergunnahs* Circle this practice, besides being in vogue in those parts in which the prohibitory law is not in force, is secretly carried on in places in which it is in operation, such as thanahs Gogri and Jamui, and even in the Municipalities of Monghyr and Jamalpore. In the *Eastern Bengal* Circle inoculation is reported to be freely practised

wherever it is not prohibited by law, and to be encouraged by the wealthy Hindus chiefly, and by the Mahomedans occasionally. It was detected in the Kissorgunge sub-division in Mymensing, and is resorted to only in those places in Noakhalli where difficulty is felt in obtaining vaccination in order to arrest small-pox. In the *Orissa* Circle inoculation prevails everywhere beyond municipal limits where only the prohibitory law is in force; but it is sometimes practised clandestinely in the Cuttack town. The places in which it is most in vogue are the Jellasore and Basta thanahs in Balasore, parts of the Khurda sub-division and Bhobaneswar in Puri, and village Beraja in the Jaipur sub-division in Cuttack. It is, however, gratifying to learn that in Cuttack "as vaccination is extending the work of the inoculators is less called for and not so remunerative as it has been." In the *Behar* Circle the practice of inoculation is universal, even in some of the Municipal and Rural areas in which the prohibitory law is in force, such as in thanahs Dinapore, Barrh and Bikram in Patna; in the Patna Municipality, where ex-inoculators under cover of their licenses do the mischief; in the town of Behar, among some rich families; in thanahs Arrah and Belauti in Shahabad, also by ex-inoculators under cover of their licenses; and in the Durbhanga town "with impunity," but here steps are being taken to stop the practice, and to introduce the Compulsory Vaccination Act. The Superintendent of this circle reports that some cases in which inoculators were detected in plying their trade were reported to the Police, but they exhibited indifference to the matter, and took no steps to prosecute the offenders, and that thus this duty devolved on the vaccinators.

Influence of inoculation on Small-pox.

192. The evils of granting licenses to ex-inoculators to practise without supervision are sufficiently illustrated in the above cases, and are much to be deprecated. The general conviction is strong that small-pox is propagated by inoculation, but for want of means and leisure for making investigations, the Vaccinating and Sanitary Officers have not been able, except to a very limited extent, to submit any positive evidence on the subject. The incomplete data that have been furnished show (*vide* table in the next paragraph) that 11·80 per cent. of attacks calculated on total attacked, and 11·73 per cent. of deaths calculated on total mortality, occurred in persons who had been inoculated. The Civil Surgeon of Mozufferpore offers the opinion that, it is only in years when small-pox prevails epidemically that the practice of inoculation, by keeping up the disease and starting new centres of infection, does active harm; but that in ordinary years the dangers arising from the practice are not very great, for it is no exaggeration to state that during long intervals of non-appearance of the disease in violent form thousands of persons are inoculated. These views are contrary to my experience in Lower Bengal.

Influence of Vaccination on Small-pox.

193. The reports indicate that whenever information of outbreaks of small-pox was received, vaccinators were sent to the scene of its ravages to stamp it out, and that, as a rule, success attended the step, excepting when the people would not accept of the prophylactic, or impeded the action of the vaccinators through the many devices which they employ to evade vaccination. I feel bound, however, to state that the local authorities do not, in very many instances, furnish information of outbreaks of the disease to the Vaccination Department. The furnishing of information should be the rule and not the exception, and if this were so, large saving of life would be effected. The marginal figures, compiled from data furnished by some of the Superintendents of Vaccination, indicate the relative values of vaccination, inoculation, and non-protection, and are significant leaving no room for comment; and the subjoined table, furnishing co-relative information, shows that while the mortality from small-pox in the areas *unprotected* by vaccination stood as high as ·25 per 1,000 of population, it amounted in the *fairly-well protected* areas to only ·17 per 1,000, and in the *thoroughly-protected* areas to the still lower ratio of ·07 per 1,000.

	Cases.		Deaths.	
	Number.	Ratio per cent. to total attacked.	Number.	Ratio per cent. to total mortality.
Vaccinations	206	7·43	5	2·79
Inoculations	327	11·80	21	11·73
Previous Small-pox ...	12	·43	......	......
Unprotected	2,225	80·33	153	85·47
Total	2,770	......	*179	......

* These are not all the deaths which occurred among the cases shown in the preceding column. They represent only the number which was known to have been distributed under the heads indicated in this table.

Mortality from Small-pox in the thoroughly-protected Areas.

	Population.	Deaths.	Ratio per mille.
Calcutta	433,219	193	·44
In the Metropolitan Circles—			
Suburbs of Calcutta	251,439	136	·54
The Burdwan, Bankura, Birbhum (excluding thanah Nulhati) Midnapore, Hughli and Serampore, Howrah, 24-Pergunnahs, Nuddea, Jessore, Khulna, (excluding thanah Moreilgunge), and Murshidabad districts ...	14,717,641	918	·06
In the Darjiling Circle—			
The Dinagepore, Maldah, Rajshahye, Rungpore, Bogra, Darjiling, Julpaiguri and Purneah districts	8,982,140	104	·01
In the Ranchi Circle—			
Thanahs Palkot, Biru, Bassia, and Hosseinabad in Lohardugga	365,529	6	·02
Thanahs Simoria and Chatra in Hazaribagh ...	101,047	3	·02
In the Behar Circle—			
Thanahs Bankipore, Patna, Dinapore, Maner, Bikram, Masaudhi, Futuha, Barrh, Mokameh, and Hilsa in Patna	1,304,164	625	·47
Total ...	26,155,179	1,985	·07

Mortality from Small-pox in the fairly-well protected Areas.

	Population.	Deaths.	Ratio per mille.
In the Metropolitan Circle—			
Thanah Nulhati in Birbhum	133,897	None	......
In the Ranchi Circle—			
Thanahs Ranchi, Lodhma, Korambe, Daltongunge, Lohardugga, Tamar, and Burwya in Lohardugga	630,662	8	·01
Thanas Tandowa, Hazaribagh, Ramghar, Kharagdiha, Barhi, Gowan, Kodarma, and Huntergunge in Hazaribagh	618,487	261	·42
The Chaibassa Circle	211,658	24	·11
Thanah Purulia in Manbhum	186,791	None	.....
In the Sonthal Pergunnahs Circle—			
The Sonthal Pergunnahs district	1,568,093	170	·10
Thanas Monghyr, Jamalpore, Gogri, Kharakpur, Jamui, and Chakai in Monghyr ...	898,216	202	·22
In the Eastern Bengal Circle—			
The Dacca, Faridpore, Pubna and Mymensing districts	8,111,778	805	·09
In the Orissa Circle—			
Thanahs Cuttack, Kendrapara, Aul, Salipore, Patamundi, Jaipore, Dharmsala and Banki in Cuttack	1,396,387	902	·64
Thanahs Khurda and Pipli in Puri ...	496,260	123	·24
Thanahs Chandbali and Bhadrak in Balasore ...	221,898	46	·20
Total ...	14,474,127	2,544	·17

Mortality from Small-pox in the very partially and entirely unprotected Areas.

	Population.	Deaths.	Ratio per mille.
In the Metropolitan Circles—			
Thanah Moreilgunge in Khulna	62,670	1	·01
In the Ranchi Circle—			
Thanahs Choria, Torpa, Sili, Balumat, Barara, Munkah, Patum, Chhatarpur, Garwah, and Ramkunda in Lohardugga	613,053	3	·004
Thanahs Bagodhar, Kashmar, Chorpa, Pachamba, Jageswar and Dumurhi in Hazaribagh	385,208	138	·35
Thanahs Chakaldhurpur, Ghatsilla, Seraikela, and Kharsowan Circles in Singbhum ...	350,306	42	·11
Thanahs Jaipur, Jhalda, Baghmundi, Ichaghar, Barabhum, Manbazar, Raghunathpore, Gourandi, Para, Chas, Govindpur, Toondi, Jharia, Nirsha and Topechanchi in Manbhum	871,437	32	·03
In the Sonthal Pergunnahs Circle—			
The Bhagulpur district	1,966,158	318	·16
Thanahs Surajgarra, Shekhpura, Sekandra, Beguserai and Tegra in Monghyr ...	1,071,568	172	·16
In the Eastern Bengal Circle—			
The Backergunge, Tipperah, Chittagong and Noakhalli districts	5,373,340	1,242	·23
In the Orissa Circle—			
Thanahs Jaggatsingpur and Tirtol in Cuttack	398,678	162	·40
Thanahs Puri, Gop, and Bhanpur in Puri ...	392,227	525	1·33
Thanahs Balasore, Basta, Jellasore, Soro, Baliapal, Basudevpur and Dhamnagor in Balasore	723,382	211	·29
In the Behar Circle—			
Thanahs Silao, Behar, and Attasarai in Patna...	452,692	84	·18
The Gya, Shahabad, Mozufferpore, Durbhanga, Sarun, and Chumparun districts ...	13,307,088	3,623	·27
Total ...	25,967,797	6,553	·25

SECTION VIII.

SANITARY WORKS (MILITARY).

194. The information embraced by the above section is not required from he Sanitary Commissioner for Bengal.

SECTION IX.

SANITARY WORKS (CIVIL).

MUNICIPAL EXPENDITURE ON SANITATION.

Total income of Municipalities and objects of expenditure.

195. The following table exhibits the amount of income of the Municipalities and Unions in each district of Bengal for the year 1883, and the purposes for which it was expended :—

Districts.	Number of Municipalities and Unions.	Income in 1883, including balance from the last year. Rs. A. P.	Percentage of Income expended on— Sanitary Works. 1883.	Sanitary Works. 1882.	Roads.	Sanitary Works including Roads.	Police.	Other requirements.
Burdwan	5	2,79,884 0 0	50·39	34·69	7·43	57·82	...	8·04
Bankura	6	27,542 15 6	31·56	22·00	7·39	38·95	...	14·66
Birbhum	1	7,280 11 0	37·34	37·40	5·32	42·66	...	7·65
Midnapore	6	00,458 1 7	43·05	30·65	19·48	62·53	...	10·94
Hughli and Serampore	14	1,66,001 11 7	29·81	28·16	16·75	46·56	...	17·95
Howrah	2	2,57,971 9 7	36·47	35·36	22·53	59·00	12·93	14·72
24-Pergunnahs ...	17	7,68,313 0 0	27·99	29·27	22·34	50·34	10·29	15·62
Khulna	3	13,180 6 4	11·32	9·26	27·21	38·53	...	19·01
Nuddea	10	86,600 0 0	27·34	23·09	24·70	52·04	...	14·51
Jessore	8	26,442 10 4	33·09	35·60	19·04	52·14	...	18·23
Murshidabad ...	4	1,02,094 4 0	39·32	28·55	13·31	52·63	...	10·80
Dinagepore ...	1	31,860 3 2	31·36	24·42	16·37	47·71	...	2·11
Rajshahye	2	34,934 0 7	35·12	17·51	23·62	58·61	...	11·01
Rungpore	1	17,692 12 8	63·17	81·48	8·24	71·41	...	4·40
Bogra	2	13,422 0 0	28·98	26·67	35·04	64·02	...	17·03
Pubna	2	26,386 0 1	27·00	25·53	21·60	48·60	...	7·78
Darjiling	2	1,20,478 7 4	38·06	33·43	16·35	54·41	...	28·07
Julpaiguri	1	9,661 8 3	68·86	29·95	..	68·86	...	3·75
Dacca	3	1,87,181 13 2	48·86	47·09	12·14	61·00	...	5·44
Faridpore ..	3	21,408 5 8	35·48	29·41	14·21	49·69	...	13·06
Backergunge ...	6	29,305 12 3	24·28	20·21	24·25	48·53	...	19·20
Mymensing ...	7	44,272 8 4	17·92	14·16	25·88	43·80	...	18·30

Districts.	Number of Municipalities and Unions.	Income in 1883, including balance from the last year. Rs. A. P.	Percentage of Income expended on— Sanitary Works. 1883.	Sanitary Works. 1882.	Roads.	Sanitary Works including Roads.	Police.	Other requirements.
Tipperah ...	2	24,355 0 0	40·07	31·24	15·18	55·25	...	24·72
Chittagong ..	2	44,200 0 0	22·55	25·75	27·65	50·20	...	15·59
Noakhali ...	1	9,956 2 3	21·30	40·61	5·28	26·58	·04	1·56
Patna	11	2,19,770 3 2	24·65	18·26	18·40	42·05	...	21·47
Gya	12	1,07,311 0 2	26·31	41·86	8·79	35·10	...	20·93
Shahabad ...	8	60,158 1 9	42·55	30·37	18·87	61·42	...	14·74
Mozufferpore ...	5	54,627 1 0	26·39	23·38	24·47	50·86	...	17·56
Durbhunga ...	2	60,464 2 4	29·79	23·69	24·56	54·35	...	8·36
Sarun ...	8	66,955 15 5	31·33	25·38	18·18	49·51	...	22·03
Chumparun ...	3	21,672 2 0	33·03	20·30	2·49	35·52	·10	18·36
Monghyr ...	3	58,818 0 0	46·93	34·22	20·42	67·35	·40	15·65
Bhagulpore ...	2	58,106 13 9	40·74	38·76	25·62	66·36	·01	14·11
Purneah... ...	3	28,609 11 6	30·92	29·12	30·71	61·63	...	6·09
Sonthal Pergunnahs ...	2	14,189 8 2	54·51	36·83	4·49	59·00	...	17·37
Maldah	2	11,923 8 9	36·83	33·78	12·12	48·95	...	37·99
Cuttack	3	48,873 13 2	35·62	33·72	12·05	47·67	...	22·56
Poori	2	40,745 0 0	35·83	19·55	12·97	48·80	...	11·65
Balasore	1	13,244 13 4	49·75	22·36	20·24	69·99	...	8·80
Hazaribagh ...	2	17,578 8 11	53·10	31·04	8·17	61·27	...	10·73
Lohardugga ...	3	23,190 10 4	38·15	32·34	13·29	51·71	...	14·82
Singbhum ...	1	3,592 15 4	38·35	30·71	25·26	63·61	...	7·92
Manbhum ...	3	17,006 4 10	36·73	22·08	12·82	49·55	...	5·48
GRAND TOTAL ..	177	33,28,762 6 1	34·48	30·75	18·20	52·68	3·38	15·04

The total income, it will be seen, amounted to Rs. 33,28,762, against Rs. 31,06,731 in 1882. Of this income 34 per cent. was expended on Sanitary Works, against 31 per cent. in the preceding year; 3 per cent. on Police, against 9 per cent.; 18 per cent. on Roads, against the same proportion, and 15 per cent. on other requirements, against 24 per cent. It is gratifying to find that on the whole the largest proportion of the income was assigned for Sanitary improvements, and, moreover, that there was a sensible increase in this proportion as compared with the percentage allotted during the preceding year, which of itself was considerably in advance of the apportionment of 1881. This improvement is no doubt due, in a large measure, to the Municipalities having, with the exception of Howrah and the Suburbs of Calcutta (whose cases are, however, under consideration with the view to removal of the major portion of the burden of the charge), been relieved of the cost of Police establishment, pursuant

to the orders of Government on the subject. Nevertheless there were towns (happily small in number) which did not divert an equitable share of their income towards the improvement of their sanitary conditions. These are the 13 in the districts named in the margin:—

Khulna	... ...	11·32
Mymensing	... ...	17·93
Noakhalli	... ...	21·30
Chittagong	... ...	22·55

On the other hand a large number of the towns utilized an appreciable, in some cases the major, proportion of their revenue in this direction. These are the 99 in the districts of—

Districts.	Percentages of income.	Districts.	Percentages of income.	Districts.	Percentages of income.
Julpaiguri	68·86	Tipperah	40·07	Faridpore	35·48
Rungpore	63·17	Murshidabad ...	39·32	Rajshahye	35·12
Sonthal Pergunnahs ...	54 51	Lohardugga ...	38·45	Jessore	33·09
Hazaribagh	53·10	Singbhum ...	38·35	Chumparun	33·03
Burdwan	50·39	Darjiling ...	38 06	Bankura	31·56
Balasore	49·75	Birbhum	37·34	Dinagepore ...	31·36
Dacca	48·86	Maldah	36·83	Sarun	31·33
Monghyr	46·93	Manbhum	36·73	Purneah	30·92
Midnapore	43·05	Howrah	36·47	Hughli and Serampore	29·81
Shahabad	42·55	Poori	35·83	Durbhanga	29·79
Bhagulpore	40·74	Cuttack	35 62		

196. The marginal table indicates the special purposes for which the amount allotted for the sanitation of towns (Rs. 11,47,930, against Rs. 9,55,429 in 1882, exclusive of Rs. 6,06,160 the cost of constructing and maintaining roads) was expended. Compared with the preceding year, great improvement is observable, particularly under the important heads of Water-supply, Conservancy and Latrines, and Treatment of the sick. The large increase of expenditure under the head of Water-supply was incurred principally in providing a water service for the Burdwan town, which cost no less than Rs. 1,10,519.; in further extending the water-supply scheme of the Darjiling town to other parts of it and to Kurseong at a cost of Rs. 10,523, and in improving the defects of the water-works at Dacca at an expenditure of Rs. 2,638. The reports also show that a much larger number of public latrines with appliances for working them, and of carts with draught cattle, was provided than in 1882, and this accounts for some of the increase under the head of Conservancy; while the larger expenditure under the head of "Treatment of the sick" is no doubt due to greater care and attention having been bestowed on providing facilities for their treatment—Darjiling alone having expended Rs. 12,806 for roofing with iron the charitable and small-pox hospitals and a barrack. On the other hand, the chief reduction is seen under the head of Drainage, but this decrement is traceable to so much as Rs. 32,917 having been expended in 1882 on the great drainage scheme of the Lalbagh Municipality in Murshidabad.

Details of expenditure on Sanitation.

	Total cost.		*Difference in 1883.*	
	In 1883. Rs.	In 1882. Rs.	Increase. Rs.	Decrease. Rs.
On Conservancy including latrines	3,07,951	2,61,509	46,442	......
„ Conservancy establishment	3,25,860	3,12,757	13,103	......
„ Drainage	96,097	1,36,775	......	40,678
„ Water-supply ...	1,60,449	31,092	1,29,357	......
„ Disposal of the Dead ..	7,629	6,917	712	......
„ Markets and Slaughter-houses	16,533	14,170	2,363	......
„ Vaccination... ...	10,992	12,048	......	1,056
„ Treatment of the Sick	1,69,339	1,24,993	44,346	......
„ Other Sanitary Works ..	53,080	55,168	......	2,088
Total ..	11,17,930	9,55,429	1,92,501	......
On construction, maintenance, and repair of Roads ...	6,06,160	5,70,200	35,960	......
Total, including Roads ..	17,54,090	15,25,629	2,28,461	......

GENERAL PROGRESS IN SANITATION.

Description of Sanitary Works executed in Towns and Districts.

197 The foregoing table, however, exhibits the cost of both original sanitary works and annual recurring incidental works, such as widening and re-metalling roads, lighting, wear and tear of plant, establishment charges, removal of jungle and other impediments to the free perflation of air, repairs of all kinds, &c. The cost of the former separated from that of the latter amounted, so far as data are available, and excluding the expenditure incurred under the heads of Vaccination and "Other Sanitary Works," and including the cost of Roads constructed and newly metalled, to Rs. 5,84,101. Details of these original works are furnished in Appendix III. The conclusion to be drawn from this account is that very satisfactory

progress in sanitation was made during the year under review. A notice of the principal works executed during the year, or which were considered for early adoption, is subjoined.

In the Towns.

198. **Drainage.**—In the *Serampore* Municipality a scheme for radically improving its drainage has been devised at an estimated cost of Rs. 30,091, towards which Government has contributed Rs. 15,000 and has authorized the raising of the loan of a similar amount. In the *Ghatal* town in Midnapore, a scheme, estimated to cost Rs. 4,000, for the opening up of a sluiced khal, having for its object the thorough drainage of the town, has been taken in hand. One end of this khal will receive fresh water from the river above the town, and the other end will carry off foul water into the same river below the town. As an initial step towards effecting the contemplated improvement of the defective drainage of the town of *Berhampore* in Murshidabad, a survey has been made and levels taken. In *Lalbagh* in the same district, as supplemental to the great drainage scheme which was completed in 1882, a system of subsidiary drains is to be laid out, and, as a beginning, a surface drain in connection therewith has been constructed in the Shahanagore ward at a cost of Rs. 700. The drainage works at *Azimgunge*, also in the same district, were taken in hand and are expected to be completed during the year 1884. A scheme is in hand in the *Dinagepore* town in extension of the present one, and will be completed shortly, for the drainage of the western portion of the town. It is anticipated that this project will materially improve the sanitary condition of the Municipality and its environs. Great efforts are being made for the improvement of the badly sanitated and straggling town of Chittagong. A systematic survey is being made, having for its object the provision of pucca drains and a bridge, the improvement of an important drain running through its large bazar, and the re-digging of the Choktai Khal for the improvement of the drainage of a large section of the town. Government has already given a grant of Rs. 10,000, and intends to bear a further share of the expenditure required for these purposes. These works, when completed, will, no doubt, benefit the town very materially. In *English Bazar* in Maldah, the drainage is stated to have been much improved. Large open drains were constructed with a good fall away from houses, with the means of being flushed, so that surface impurities and stagnant and foul water from hollows and excavations can be carried off, and the inhabited parts of the town and villages kept as dry and well-drained as possible. But I found, when inspecting this town in January last, that the drains were blocked generally throughout, that the new drains were frequently so deep as to act like elongated cess-pools, and that in Mukdumpore there was still no visible exit to the surface water, the pucca drains having a lower level than the kutcha one supposed to carry off the water. In the *Cuttack* town the drainage scheme commenced in 1879, was progressed with by the construction this year of a branch drain from Gooptipool, by which much surface water will be carried off from the central part of the town. Some bridges were built over the drains and some of the latter were lined with stone to prevent percolation of their contents into the sub-soil. It is believed that the town is now fairly well drained.

In the Districts.

199. Further improvements were effected to the drainage of the fever-stricken district of *Nuddea*. Obstructions to drainage caused to the road from Chagda Railway Station to Bongong were removed by the provision of drains, three wrought-iron girder bridges and 19 culverts at a cost of Rs. 11,499, including a moiety of the amount which falls to the share of the Bongong sub-division which has been transferred to Jessore. Two large timber bridges were taken in hand on the road from Kumarkhali to Kanchadier in the Kushtia sub-division. One of these was completed and the other was in progress. This work, which cost Rs. 1,853, is calculated to improve a large tract of country lying on the western side of the first four miles of the Kumarkhali road. Four bridges and four culverts were put up on the road from Khaksha Railway Station to Khaksha Bazar at an expenditure of Rs. 6,817. In *Murshidabad* the two main cuts—the northern and southern—about 8½ miles in length, which drain the Berhampore town and the low levels and bheels between the town and

Gobra nullah, and the Farashdanga cut which drains the Katigunj bheel which receives the drainage on both sides of it, were cleared and deepened. In the Balughat village in *Dinagepore* new drains were provided and the roads raised in order that obstructions to drainage may be removed. In the *Sarun* district the Bengal and North-Western Railway has progressed. This undertaking, the Magistrate says, will have an important bearing, for the future, on the health of the district, inasmuch as he believes that, as the general water-flow is, in the first instance, from the *river bank* northwards, and as for the first 35 miles of its course from Sonepore the railroad runs parallel to the river and only a mile or two from it, the whole of this most densely populated tract of country would become water-logged if the waterway through the railroad were insufficient, which he thinks, for reasons submitted by him, *is* insufficient under the arrangements at present adopted by the Company. This question is, however, being considered by the District Engineer. In the *Sonthal Pergunnahs* a survey of the great swamp to the south of Rajmehal, which is a source of much disease, was made with a view to improve its drainage.

200. **Water-Supply.**—Much progress was made this year towards the completion of the water-supply scheme for the *Burdwan* town, referred to in the Report of the last year. Three settling tanks were completed; considerable progress made in the construction of the masonry clear-water reservoir; pipes laid down in the principal streets of the town, and the filters were under construction. The total expenditure incurred this year amounted to Rs. 1,10,519. In the *Hughli* Municipality a project for supplying filtered water to the whole town is under consideration. The scheme for supplying the *Howrah* Municipality with filtered water, estimated to cost Rs. 13½ lakhs, was submitted to and considered by Government; but as it was doubtful whether it would be wise to take the water from the Hughli at Rishra, or from any part below Pulta, it was determined that this point should be settled first. The matter was therefore referred back to the Commissioners, and they were at the same time asked to prepare a combined scheme of water-supply for all the riparian Municipalities between Serampore and Howrah. I will again refer to the latter scheme in a subsequent paragraph of this section of the Report. The question of the extension of the Calcutta water-supply system to the *Suburbs of Calcutta* is in a fair way to accomplishment, one of the great difficulties in the way of the Suburban Municipal Commissioners having been removed by the Government agreeing to relieve the Municipality of one-half—about Rs. 38,000—of the charge for the Police from the beginning of the official year now current. The scheme will admit of the supply of 4,000,000 gallons of water daily (to be restricted at present to half the quantity); the necessary machinery is on its way from England; and a Bill to give effect to the scheme and to authorize the Commissioners to levy a water-rate is under consideration. In the *Berhampore* town in Murshidabad a channel with sluice was constructed through Gorabazar, commencing near the circuit-house and leading into the Chaltea bheel. This work is said to confer great benefit on the people in Gorabazar and its neighbourhood, as it drains the Gorabazar ward of surface water, and flushes several tanks and some shallow basins with water from the Bhagiruthi, and thus secures a fresh supply for the people. In *Darjiling* three additional jhoras or springs were connected with the main pipes from Senchal, by which the daily supply of water has been raised from 69,500 to 75,000 gallons; eight additional hydrants were provided; the water service was extended to the Tumsang and Bhootea bustees, to the native town, and to the slaughter-house at a cost of Rs. 8,057; and an auxiliary line, with pipes, was laid from the reservoir to chowrastha to guard against damages to the main pipes during the rains. The Darjiling water service was also extended to the *Kurseong* town at a cost of Rs. 2,465. In the *Dacca* town the tunnels and filter beds of the water-works, which permitted leakage, were improved at a cost of Rs. 2,632. The project for the supply of filtered water to the *Bhagulpore* town, referred to in the Report for 1882, was submitted to Government for sanction at the close of the year under review. In the *English Bazar* town in Maldah the water-supply arrangements were improved by re-digging

In the Towns.

and cleaning eight large tanks in parts of the town away from the river, which had almost dried up owing to scanty rainfall, and providing the four best of them with masonry ghâts for the convenience of the public. It is much to be regretted that the Commissioners of *Cuttack* negatived an important project, which had for its object the introduction of purer water from the river taken off at Naraji, a point above the town, where it is dammed by the irrigation weir. The present supply is from wells and is bad.

In the Districts.

201. In the *Hughli* district water was brought down through the Kana Nuddi from the Damuda to the Saruswati river. In former years this channel consisted in the dry season of a succession of filthy and stagnant pools; it now represents a flowing stream, which, it is believed, must exercise a beneficial effect on the health of the densely populated villages on its banks, by affording a purer supply of water, and, perhaps, by improving the sub-soil drainage of a large tract of the country. Some reservoirs for the storage of water were constructed in different parts of the *Sonthal Pergunnahs* district.

202. **Bustees.**—The Rishra bustee in the *Serampore* town, belonging to Government, which was in a disgraceful condition, was leased to the owners of the Hastings Jute Mills, who have improved it considerably by levelling the ground, constructing long lines of huts for their workmen with open compounds and broad roads, and providing public latrines, good tanks, &c. The Champdani bustee, which was in a very insanitary condition, and where cholera prevailed severely in 1882, having been accidently burnt, was similarly improved by the Manager of the mill situated therein, who has, moreover, constructed a covered filter in which the condensed water of the mill is filtered and then supplied to the workmen. In the *Suburbs of Calcutta* Malie Bustee was reclaimed and satisfactorily improved at a cost of Rs. 1,110, and similar improvements were effected in the *Howrah* Municipality at a cost of Rs. 1,130.

203. **Medical Relief.**—In *Monghyr* the dispensary—the gift of Mr. Dear —referred to in the Report for 1882, was completed and occupied during the year under review. Additional accommodation was provided in it by the construction of three upper rooms for the use of natives of a better class than those who usually resort to charitable dispensaries, and of a ward, at a distance from the hospital, for moribund cases, or cases which require to be isolated. The whole cost of the undertaking was Rs. 31,000. In Ulipur in *Rungpore* a hospital was erected by Moharani Surnomai Dassia. A contagious disease hospital was constructed in *Purulia* in Manbhum. The Eden Sanitarium in the *Darjiling* Municipallty was opened in April 1883. This is semi-private institution for paying patients.

Condition of the Calcutta foreshore.

204. *Port of Calcutta.*—It was reported that cleanliness was fairly maintained throughout the year at all points of the river bank on the Calcutta side, except that the khal, which passes through the premises of the ex-King of Oudh, discharged into the river the drainage and, at times, much filth which it brings down from the interior; and that sewage was again being discharged into the river from the flushing inlet at the Port Commissioners' jetties. The attention of the authorities concerned having been called to these defects, an improvement was effected with regard to the first-named nuisance, and a stop put to the second.

Public latrines on the Calcutta foreshore.

205. The two new latrines constructed last year by the Port Commissioners at the Bagbazar and Mohuntory Ghâts could not be brought into use for want of water. Another latrine was put up on the bank of Tolly's Nullah at its entrance below Hastings' Bridge—a point where there is a large traffic—but, although finished, it was not opened by the end of this year. It is under contemplation to erect another latrine near Schalch's wharf. When this one is constructed, there will be five latrines on the river bank above bridge; but the Health Officer suggests that these should be supplemented by others on the town side of the Strand Bank road, to the provision of which the attention of the Corporation was drawn in the Government Resolution on the Report for 1880, but as yet without effect.

206. The state of the bank on the Howrah side of the river is stated to have been satisfactory during the year. The embankment, which is being constructed on this side by the Port Commissioners, will, it is believed, assist in improving the conservancy of the bank; but the Health Officer mentions that latrine accommodation should be provided for those who will use this embankment.

Condition of the Howrah foreshore.

Corpses and Carcasses in the River.

207. There was nothing to complain about under this head.

Water-supply to the Shipping.

208. In this matter also no complaints were received from the shipping. The water-boats were frequently inspected and found to be in a clean condition. The crews of the native passenger boats at Prinsep's Ghât petitioned for a hydrant to be set up at the ghât, so that they may use the filtered water instead of the foul river water which they believed was unwholesome and productive of bowel-complaints. They were informed by the Chairman of the Calcutta Municipal Corporation that their request would be considered after the extension of the water-supply scheme, now under contemplation, shall have been effected.

Quarantine.

209. Quarantine for cholera against arrivals from Batavia and Sumatra was withdrawn in May, after having remained in force since July 1882. During this period no vessel from these ports was found to have had cholera on board. A pilgrim vessel (steamer) arriving with 584 pilgrims from Jeddah, and having three cases of small-pox, was cleansed and disinfected. The Health Officer has, in his report, discussed, at length, the question of quarantine and the importation of cholera into Egypt and Europe from India, as ventilated by the public press and some distinguished sanitary authorities in France. His observations are now before Government.

MISCELLANEOUS SANITARY OPERATIONS DURING THE YEAR.

Extension of Sanitary Laws.

210. The Bengal Municipal Act V (B.C.) of 1876 (Chapters I, II and V) was introduced into the towns of *Bali* in Howrah, *Jamalpore* in Monghyr, *Kotchandpur* in Jessore, *Perozpur* and the villages of *Massimpore* and *Krishnagur* in Backergunge, and *Shahibgunge* and the adjoining villages of old Shahibgunge, in the Sonthal Pergunnahs. Part VII of the same law was enforced in its entirety in the towns of *Jamalpore* in Monghyr and *Moheshpore* in Nuddea, and in part in the towns of *Goberdanga* in the 24-Pergunnahs (sections 235 to 255, 273 to 285 and 292 to 294), *Jessore* (sections 256 to 263), and *Hazaribagh* (sections 285 to 294); and Part IX was brought into operation in the *Burdwan* and *Dacca* towns. Bye-laws, framed under this Act, were brought into operation in the towns of *Krishnaghur* in Nuddea, *Berhampore* (additional) in Murshidabad, *Suburbs of Calcutta* (revised), *Darjiling* (additional), *Rampore Beauleah* (additional) in Rajshahye, *Faridpore* (additional), and *Bhagulpore* (additional).

Act VI (B.C.) of 1878, empowering the Commissioners of the first class Municipalities to control public and private latrines and to levy a fee for supervising the latter, was brought into operation in mohullas Goaltooly, Charghatta, Koolibunda and Soojanbas in *Hughli* town, in a further portion of the *Howrah* town, in ward V of *Krishnaghur* in Nuddea, in mohullas Meahpara, Gunnukpara, Kumarpara, Foodkipara, Rampore Bazar, Sagurpara and Sukerchuck in *Rampore Beauleah* in Rajshahye, and in *Patna* for the second time.

Act II (B.C.) of 1879, amending the Poori Lodging-house Act IV (B.C.) of 1871, was extended to thanas *Dantun* and *Garbetta* in Midnapore, and *Ranigunge* in Burdwan.

The places to which Act IV (B.C.) of 1873, rendering registration of births and deaths compulsory, were extended are mentioned in section V of this Report, and those in which Act IV (B.C.) of 1865, prohibiting the practice of inoculation, and Act V (B.C.) of 1880, rendering vaccination compulsory, were brought into operation, in section VII.

The following enactments, bearing on sanitation, were passed during this year.

Act V (I.C.) of 1883, relating to the Indian Merchant Shipping. The powers which this law confers on the Health Officer of the Port of Calcutta have been mentioned in the Report for 1882.

Act VII (I.C.) of 1883, an Act amending the Native Passenger Ships Act of 1876. This law provides, among other matters, regulations relating to overcrowding of passengers, carrying of a Medical Officer in certain cases, granting of Bills of Health, and the medical inspection of passengers and the detention of those found suffering from any dangerous or contagious disease.

During the year now current, Act I (B.C.) of 1884, amending further the Poori Lodging-house Act of 1871, and Act III (B.C.) of 1884, revising the law (Act V (B.C.) of 1876) relating to Municipalities in Bengal, were passed. The latter enactment, an important one, is to be enforced from the 1st of August 1884.

Importance of providing certain Riparian Towns with a pure Water-supply.

211. The question of providing a pure drinking water-supply for the riparian towns* between Howrah and Serampore calls for more than a passing notice in a sanitary point of view. The Government has taken up the subject, and has asked the Howrah Municipality to devise a scheme which will be common to all these towns, and it now depends on the Commissioners of that Municipality to bring the proposition to the desired issue. The drinking water for these towns is taken chiefly from the river and tanks. The latter, in many cases, is subject to much contamination and is full of organic impurities, the water being little better than sewage in solution. The river water, although superior in quality, is still polluted to a degree detrimental to health. Howrah has well nigh experienced a water famine, caused by the deficient rainfall of 1883 followed by drying up of the tanks. This was warded off by conveying river water and the condensed water of the mills into the tanks in the town. The trade reports show that these towns, forming a long line of suburbs commencing at Howrah, are not only commercially associated with each other, but have also an intimate connection with Calcutta, the health of which they must, from proximity, sensibly affect. Howrah is only second among mofussil municipalities in Bengal with regard to extent of area, population and fiscal importance. It contains large and important mills, factories and dockyards, where a large number of artizans, coolies and other labourers from the rural tracts and from Calcutta are employed. It is the terminus of the East Indian Railway, and in this connection it is largely resorted to daily—nay, I may say hourly—by people from Calcutta. It, moreover, sends daily a large number of clerks and labourers to Calcutta, is the suburban residence of many people of Calcutta, and contains a European population numbering 1,776. Its trade in agricultural and other produce is important. Shibpore is a flourishing little town inhabited to a great extent by clerks who are employed in Government and mercantile offices in Calcutta. It has also a market, where the industries of many places are available, to which a large number of purchasers is attracted. The Bali town has a similar market and a large paper mill. Utterpara is a large and thriving village immediately south of Bali, and contains a small but well conducted Municipality. Kotrung is a large village situated on the banks of the Hughli. It is noted for its brick manufacture, a portion of which is supplied to Calcutta. The Calcutta Municipal Corporation also manufacture their bricks here. Serampore, situated on the East Indian Railway, is a considerable town, including several villages, and occupies a prominent place in a commercial point of view owing to its great trade in jute. It contains a number of jute mills and also a paper mill. The car festival of Juggernath, which is conducted in the villages of Mohesh and Bullubpore in its suburbs, with great pomp, attracts a large concourse of people from many places, including Calcutta. All these towns, moreover, either by forming railway stations, or by being situated in proximity to them, are more or less associated with the railway-borne traffic.

* Howrah including Shibpore and Golabari, Bali, Utterpara, Kotrung, and Serampore.

Another important point connected with this question is that the Howrah district and the Serampore sub-division are very densely populated, considerably more so than any other district in Bengal proper, Calcutta and its Suburbs excepted; for while in the districts the population per square mile ranges from 771·78 in the 24-Pergunnahs to 126·53 in Darjiling, in Howrah the incidence of population to the square mile is 1,334·83, and in Serampore 1,026·11.

Turning now to the prevalence of cholera and fever in these towns, which are materially influenced by the water used by the sufferers, chiefly the former malady, we find from the figures marginally furnished, exhibiting the death-rates from these causes during the five years 1879 to 1883, that the mortality from cholera has steadily increased, and is at present lamentably high; and that, in recent years, there has been a decline in fatality from fever; but, in connection with this diminution, it should not be forgotten that during the years anterior to 1882 the areas in question, particularly Serampore, were affected by the disease in a severely epidemic form.

Districts.	Towns.	Population.	Ratio of Deaths per 1,000 of Population.									
			Cholera.					Fevers.				
			1883.	1882.	1881.	1880.	1879.	1883.	1882.	1881.	1880.	1879.
Serampore.	Serampore ...	26,496	4·90	10·83	6·67	1·06	2·03	12·86	17·81	15·62	16·37	18·90
	Kotrung	5,747	7·13	7·30	8·87	2·95	7·30	6·96	10·26	18·96	15·13	16·70
	Utterpara ..	5,510	8·53	7·25	2·90	3·62	3·08	7·25	7·25	8·89	9·25	11·25
Howrah.	Bali	14,815	6·54	7·22	5·73	4·31	3·71	9·51	17·34	20·24	20·38	15·45
	Howrah, excluding Bali.	90,813	6·12	6·17	4·14	1·68	3·76	8·72	8·93	13·98	13·87	10·96

I have thus emphasized the above question, because a good and pure water-supply for drinking and domestic use is a matter of prime and vital importance, and occupies a prominent position in sanitation in connection with the prevalence and fatality of cholera.

Dum-Dum should be supplied with a Water-service.

212. As Barrackpore with its cantonments is now enjoying the benefits of a pure water-supply by the extension to it of the Calcutta scheme, it appears reasonable that Dum-Dum, only 10 miles distant from it, should also partake of this advantage. Troops are always located in the cantonment of Dum-Dum, but, I believe, the only source from which they derive their drinking water is the Digla tank. There were differences of opinion as to whether the water of this tank did possess the purity ascribed to it, and Dr. deFeback was invited to inspect and report on it; but although he did not furnish this report, owing to the order of the Government of India contained in Resolution, Home Department, No. 128—140, dated 10th September 1868, desiring the Sanitary Commissioner to abstain from interfering with any matter connected with military administration, there is a record of his opinion in this office, from which it is seen that this tank is not protected from defilement by human and cattle ordure, from percolation or washing into it of surface impurities, and from other causes. On analysis it was found that the water of this tank gave indications of probable sewage contamination.

Intra-mural and intra-village interments.

213. This very reprehensible practice, which pollutes the soil and the water-supply in proximity to it, is carried on to a very large extent in the villages in the Province. The village Sanitary Reports submitted by the Vaccination Department during this year, which, however, do not cover the whole area, disclose its existence in the villages situated in the districts noted in the margin.

Districts.	Number of villages.	Districts.	Number of villages.
Burdwan	3	Rajshahye	74
Bankura	1	Rungpore	17
Birbhum	26	Bogra	28
Midnapore	8	Darjiling	8
Hughli	1	Julpaiguri	14
Howrah	10	Dacca	5
24-Pergunnahs	44	Noakhalli	11
Nuddea	207	Bhagulpore	2
Jessore	30	Monghyr	7
Murshidabad	72	Maldah	17
Khulna	16	Manbhum	5

It is much to be regretted that it is not easy to prohibit this practice for various reasons, the chief being that the villagers generally cannot recognize the benefits of altering a time-honoured institution; that, in the majority of instances, cultivation is brought up to the very confines of the village, thus leaving no land available for a common burial ground; and that the people dislike to bury in land subject to annual inundation. But it is astonishing to find, from the Annual Sanitary Reports, that the practice is still prevalent in the urban areas noted in the margin.

Pubna.	Serajgunge.
Khulna.	Noakhalli.
Sherpore.	Bohar.
Barrh.	

In the case of the Pubna Municipality the suggestion to suppress the practice was made so long ago as November 1880 when I inspected

it, and is still forming a subject of correspondence. The Commissioner of the Rajshahye Division has given me every assistance in his power, but the Municipal Commissioners seem very difficult to influence. Legislation to enable village communities to acquire land for cemeteries seems the first step towards checking this very widespread evil.

214. Allied to the above question is that regarding the casting of dead bodies into rivers and other sources of water-supply. The reports of the Civil Surgeons disclose that this practice is in vogue in the towns situated in the districts named in the margin. I have also no doubt that it is carried on in several second class Municipalities. From personal enquiries I have found it an almost universal practice in the district of Nuddea, where cholera is severely prevalent now, and it exists also in other districts, it being a common thing for the poor to partially cremate bodies and then consign them to the river. While there is no reason whatever why this great evil should not absolutely cease in urban areas, the difficulties attending its prohibition in villages will be apparent from the case of the Hatika village in Nuddea which was specially brought to notice, and on which action was taken during the year under review. One of the Deputy Superintendents of Vaccination, Metropolitan Circles, brought to notice that corpses with heavy weights attached to them were thrown into the river Howlee in thannah Chuadanga in Nuddea, whereby the health of village Hatika, situated on the banks of that river, was endangered. The question was submitted to Government with the recommendation that the offence be seriously dealt with. The Commissioner of the Division, to whom the subject was referred, stated, on the report of the Magistrate, that the practice was general among the poor (especially in times of great mortality), who cannot afford the expense of cremation, and that it was difficult to put an entire stop to it, notwithstanding that notices prohibiting the practice are issued and, when possible, prosecutions for breaches are instituted, inasmuch as the corpse is generally thrown into the river at night, and becomes decomposed or destroyed beyond recognition. He suggested that the chowkidars and punchayets be directed, in reporting a death in their village to the Police, to state how the body had been disposed of, and also to ascertain that it has actually not been thrown into the river, so that the friends of the deceased, knowing that an account of the corpse would be demanded and enquiry made, will not take the risk of throwing it into the river.

Throwing of Corpses into Rivers, &c.

Khulna.
Noakhalli.
Patna (only Barrh).

215. During the year a circular was issued to the Commissioners of all the first and second class Municipalities, specially recommending them to adopt Major Ramsay's Patent Portable Land Manuring Privy, which was found by Dr. deFabeck to work admirable in some municipalities, its special features being "the immediate and complete disposal of the excreta, both solid and liquid, into the soil, without the intermediary use of carts or manipulation of any description, by which the nuisance of public deportation is avoided, a possible source of infection avoided, and a considerable saving of expense acquired;" and also in comparison with many other processes, "by far the most efficient, the one most suited to the habits and prejudices of natives, the most cleanly, and the one solving, in the most satisfactory manner possible, the vexed question of the disposal of sewage." The replies elicited by this circular indicated that, excluding Patna, Barrh, Futuha and Monghyr, where the privy had already been brought into use, in only the Bettiah Municipality it was adopted experimentally, that Jessore consented to adopt it, that at Jamalpore a similar privy was in use, that in Chupra one known as D'Abrue's patent had been adopted; that 16 Municipalities proposed to adopt it after ascertaining its cost, or after provision for the required expenditure had been made in the ensuing budget, &c., and that, excluding a few from which no replies had been received, the rest could not adopt it, owing chiefly to want of space, the towns being crowded; or to paucity of funds, &c.

Major Ramsay's Patent Portable Land Manuring Privy.

216. With regard to the investigation which was set on foot by Dr. deFabeck in relation to the utilization, for drinking purposes, of the waste water which had

Utilization of condensed Water of mills for drinking purposes.

been exposed to a high temperature while passing through the condensers of jute mills, I beg to state that of the 21 proprietors of such mills, situated in Howrah, Serampore and 24-Pergunnahs, who were addressed on the subject, only one, viz. the poprietors of the Champdanni Jute Mill, has furnished a reply. I regret, therefore, that I am not in a position at present to submit the report on the subject called for in paragraph 11 of the Government Resolution on the Annual Report of this Department for the year 1882.

Characteristics of Epidemic Cholera.

217. In July a communication was received, through Government, from Her Majesty's Consul at Alexandria, forwarding copy of a letter from Dr. Hassan Pasha Mahmond, the President of the Maritime and Quarantine Sanitary Board of Egypt, to Mr. Mieville, the British Delegate to that Board, requesting to be supplied with a weekly return of deaths from cholera in Calcutta, and desiring that, as notwithstanding that the mortality from cholera is high, the Medical authorities in India still certify that the disease is not epidemic, an explanation be given as to the conditions which, in their opinion, constitute cholera epidemics. The Government requiring a report on the latter point, the Health Officer of Calcutta, Dr. K. McLeod, to whom the request was referred, replied that the subject had been fully considered by himself and Drs. Coates and Birch as Members of the Cholera Board in Calcutta, and that they had arrived at the following conclusions as to the characteristics of an epidemic. "That it spreads from place to place exhibiting the following phenomena:—

(*a.*)—"Invasion of virgin area. (*b.*)—Somewhat sudden increase, limited duration, and gradual disappearance of the disease. (*c.*)—A marked tendency of grouping of cases. (*d.*)—Alternate periods of prevalence and total immunity in the affected area.

"That with regard to cholera in Calcutta, it increases and declines gradually at certain seasons with unfailing regularity, and at its worst it is scattered, sporadic cases appearing in a discrete way throughout the town, grouping of cases being the exception. Accordingly, cholera in Calcutta does not present the features of an epidemic, but, typically, of an endemic disease."

Reports on the sanitary condition of Emigration Depôts.

218. The sanitary condition of the Calcutta and Goalundo emigration depôts, and the health of the coolies, are stated by the Medical Inspectors of those institutions, whose reports have been submitted to Government, to have been on the whole good, and the quantity and quality of the diet unobjectionable.

Sanitation promoted by district officers and others.

219. Mr. Anderson, the Magistrate of *Bankura*, continued to instil into the minds of the people the urgent necessity of maintaining ordinary sanitation in the way of preserving the drinking-water pure and removing insanitary surroundings. But in some instances his efforts did not meet with complete success, due partly to the poverty of the people and partly to inattention on the part of the officers entrusted with the supervision of the proposed work. Mr. Sharp, the Magistrate of Faridpore, paid great attention to removal of jungle, jute soaking, drinking and household water-supply, &c. During his tours he took along with him an overseer, a sircar and 6 coolies, by means of whom, he, under his personal supervision, improved or repaired village roads, ghats, short khals near the great rivers, &c., corrected defects in water-ways, and performed various other works. He found this plan useful, easily practicable and successful. He also adopted careful arrangements for the arrest of the spread of cholera. *Monghyr.*—Mr. Dear presented a new hospital, containing ample accommodation, to the Monghyr Municipality, which cost him over Rs. 31,000. *Sonthal Pergunnahs.*—Mr. S. S. Jones, the Sub-Divisional Officer of Deoghur, raised a sum of Rs. 1,500 by subscription and employed it in cleaning and improving the water-supply of, and in opening out several roads in, the Deoghur town. *Cuttack.*—Babu Baidanath Panda, Rai Bahadoor, kept up a dispensary in Dharmasala at his own cost.

SECTION X.

PERSONAL PROCEEDINGS.

PROCEEDINGS OF THE SANITARY COMMISSIONER.

Officers in charge of the Office during the year.

220. Dr. deFabeck was in charge of this office the from beginning of the year to the 15th December, on which date I resumed charge.

Places visited and inspected during the year with results.

By Dr. deFabeck.

Towns.		Dispensaries.	
Howrah	... In January.	Buxar	... In March.
Serampore	... " February.	Patna	... " April.
Buxar	... " March.	Arrah	... " "
Arrah	... " April.	Kurseong	... " November.
Patna	... " "	Darjiling	... " "
Darjiling	... " November.		

By Dr. Wood, Deputy Sanitary Commissioner, Darjiling Circle.

Towns.

Julpaiguri Union in November and again in December.
Sherpur Municipality in December.

221. The eight towns and five dispensaries named in the margin were inspected during the year, two of the former by Dr. Wood, Deputy Sanitary Commissioner, Darjiling Circle, and the remainder of the towns and the dispensaries by Dr. deFabeck. During 1882 the conditions of nine towns and two dispensaries were enquired into. Dr. deFabeck was of opinion that the services of the Deputy Sanitary Commissioners should be utilized in instituting, while on circuit duty connected with vaccination, enquiries into the condition of the towns and rural areas laying in the direction of their tours, which are notably unhealthy, and submitting special and detailed reports regarding them in much the same way as is done by the Sanitary Commissioner; and, as a beginning, he desired Dr. Wood to carry out this intention. Dr. Wood has visited several other places than the two named in the margin, and submitted reports thereon: but as these reports belong to the records of the year now current, an account of them will be furnished in the Annual Report of that year. Of the towns visited during the year under review, the condition of Howrah, Serampore and Darjiling may be said to be fairly satisfactory. Much was done during the year for the improvement of the sanitation of the Darjiling Sanitarium by rectifying several of the defects noticed at the inspection in 1882. The rest of the towns exhibit many grave transgressions against sanitary laws, the condition of Sherpore, Julpaiguri and Buxar, demanding urgent attention, as will be seen from the abstracts of the Inspection Reports given in Appendix IV to this Report.

Lectures on Hygiene delivered at the Medical College.

222. In the capacity of Professor of Hygiene in the Medical College, Dr. deFabeck delivered 12 lectures on the subject to 26 students; and I delivered 8 lectures to finish the course.

Reports on sanitary questions submitted to Government.

223. Only two reports of this nature were called for and submitted to Government during the year. One of them referred to the revision of the diet scale for lascar crews, consequent on the law relating to Merchant Seamen having been amended by Act V (I.C.) of 1883. The two points which demanded consideration in connection with this question were, to what extent the existing diet scale should be revised so as to form a maximum scale for this class of seamen, and what quantity of biscuits and sugar should be allowed in lieu of rice and dâl in bad weather. Dr. deFabeck replied with regard to the first point that, if the flour in the existing scale were increased from 6 to 10 ounces, and the dâl from 4 to 6 ounces, the scale would be sufficient for the class of seamen in question; and with regard to the second point, that 6½ ounces of biscuits and two ounces of sugar, in addition to the quantity provided in the existing scale, should be allowed in bad weather, instead of the rice and dâl. The second question involved the consideration by Dr. deFabeck of a set of instructions framed by the Civil Surgeon of Cuttack, to be adopted for preventing the spread of cholera during epidemic seasons. Dr. deFabeck condemned them as injudicious and unworthy of serious recognition, principally because they did not provide for the means which take the first place in combating the disease, viz. the most efficient maintenance of sanitary rules and practice, and the constant and careful preservation of localities with their populations in the best sanitary condition.

224. The Health Officer of the Port of Calcutta performed his duties energetically and in a very satisfactory and commendable manner. The number of inward and outward-bound vessels inspected by him during the year under review was 815 and 649 respectively, aggregating 1,464 vessels, against 1,367 during the preceding year, distributed as shown in the table in the margin, which also exhibits the number of seamen who arrived in, and departed from, the Port. The corresponding numbers of seamen in 1882 were—Europeans on inward-bound vessels 19,764, and on outward-bound vessels 14,993, representing a total of 34,757; and natives in the former class of vessels 4,364, and in the latter class 2,383, aggregating 6,747. The comparison indicates a commendable increase in the inspection work of the year. In addition, enquiry was instituted into the health and treatment of 4,783 against 4,853 lascars who returned into Port from foreign voyages. The results of this enquiry have been submitted in paragraph 30 of this Report.

PROCEEDINGS OF THE HEALTH OFFICER OF THE PORT OF CALCUTTA.

Inspection of Vessels.

VESSELS.		Inward-bound.	Outward-bound.
Foreign	...	779	647
Coasting	...	36	2
Steamers	...	300	132
Sailing vessels	...	515	517
SEAMEN.			
European	...	21,005	15,746
Native	...	8,606	2,632
Total	...	29,611	18,378

225. The Health Officer observes that no legal enactment exists under which powers are given to any authority to compel the disinfection of vessels which are known to have had infectious diseases on board previous to their arrival in this Port, or of vessels which have had cholera during their stay in Calcutta prior to their departure. He notes that the masters of vessels are of opinion that they have no option in the matter under sections 194 to 197 of the Merchant Shipping Act, but that, on the contrary, they are responsible for the effects of the seamen; and that they are known to take away the wearing apparel, to sea and, if the owner thereof dies, to sell it by public auction on board, and thus distribute it through the ship. He instances cases in which vessels have arrived in Port thus infected, and he suggests that some legal provision should be made to deal with infection on board of vessels in Port in the same manner as in premises on shore.

Absence of legal powers for disinfecting vessels, a sanitary want.

226. The Native Sanitary Inspector of the Port of Calcutta appears to have discharged his duties with commendable zeal and satisfactorily. To enable him to carry on these duties in a regular and systematic manner, the river has been divided into six sections, one of which he goes over daily in alternation, visiting the passenger and cargo-boats and all descriptions of native craft. He ascertains what sickness exists on board, and affords information to the crews of the situation of the nearest hospitals, advises the persons in charge to send their sick to them, and, in cases of cholera or of infectious disease, obtains the assistance of the Police for their removal to hospital. He inspects the foreshore of the river and the conservancy arrangements which obtain at it, bringing to the notice of the Health Officer any defects he may discover. He also informs the Water Police of the presence within Port limits of foul cargo-boats requiring cleansing. The following is a summary of the amount of work which was performed by him during the year:—

PROCEEDINGS OF THE NATIVE SANITARY INSPECTOR OF THE PORT OF CALCUTTA.

12,830 boats inspected, of which 542 were found in a filthy condition.
390 complaints made to the Police.
327 persons found sick on board of boats.
351 times latrines were inspected, of which 25 were found in a filthy condition.
79 Police water-boats inspected.

227. The subjoined table exhibits the number of villages visited by the officers of the Vaccination Department. Compared with the returns of the preceding year, advances are observable in the inspections of all the Superintendents and Deputy Superintendents, excepting the Deputy Superintendent of the Sonthal Pergunnahs Circle, who alone retrograded in his inspections, and that to the extent of more

PROCEEDINGS OF THE OFFICERS OF THE VACCINATION DEPARTMENT EMPLOYED ON SANITARY DUTY.

Number of villages visited.

than half the number of the inspections of 1882. Relatively considered, the increase in the inspections of the Superintendents of the Orissa, Ranchi, Metropolitan and Behar Circles, and of the Deputy Superintendents of the Metropolitan Circles, take pre-eminence in the order noted, while those of the Superintendents of the Darjiling and Eastern Bengal Circles and of the Deputy Superintendents of the Darjiling, Ranchi and Eastern Bengal Circles, while exhibiting improvement, cannot be considered satisfactory. It should, however, be noted that the diaries and special reports submitted by the Darjiling Superintendent indicate that he had exhibited superior and exhaustive care and attention in all his inspections. I do not comment on the work of the Inspectors, Native Superintendents and Inspecting Head Vaccinators, as these officers, excepting those attached to the Darjiling and Sonthal Pergunnahs Circles, were not at liberty to perform sanitary work during this year, inasmuch as Rule IX of the "Rules for the guidance of the officers of the Vaccination Department with reference to their vaccination and sanitary inspections,' prohibits their doing so until they shall have passed a satisfactory examination in elementary Hygiene. This examination the majority of these officers underwent during the year, and those of them who have passed satisfactorily will undertake sanitary work during the next working season:—

Circles.	By the Superintendents.		By the Deputy Superintendents.		By the Inspectors.		By the Native Superintendents.		By the Inspecting Head Vaccinators.	
	Number.	Villages.	Number	Villages.	Number.	Villages.	Number.	Villages.	Number.	Village
Metropolitan	1	358	4	914	......	......	......	......	......	......
Darjiling	1	69	2	114	6	111	......	......	1	26
Ranchi	1	565	1	100	......	......	......	......	......	......
Eastern Bengal	1	177	2	46	......	......	......	......	......	......
Sonthal Pergunnahs ...	......*	......*	1	93	2	25	......	......	1	24
Behar	1	390	......	......	......	......	......	......	......	......
Orissa	1	794	......	......	......	......	......	......	......	......
Total ...	6	2,353	10	1,267	8	136	......	......	2	50

* The Superintendent being the Civil Surgeon of the district and stationed at its head-quarters, was unable to perform Sanitary inspection work.

228. A *resumé* of the observations relating to the health conditions of the villages made by the Deputy Sanitary Commissioners during their sanitary inspections is subjoined:—

Health conditions of the Villages inspected.

Metropolitan Circles.—Dr. K. P. Guptu. Water-supply.—Excluding the cases in which people live near rivers or fresh-water streams, want of good drinking water is a very common complaint, even, very often, in many places which are actually inundated during the rains. The people are not altogether careless about the water they drink, as they obtain the best which may be available. The Deputy Sanitary Commissioner advised the people to clean their tanks, and reserve some of them solely for drinking purposes, and always to boil and filter their drinking-water, specially during cholera epidemics; and he suggests that when the owners of tanks cannot undertake the cleaning of their tanks through poverty, it should be done by the zemindars or the Road Cess Department; that in order to obviate the high cost of digging or cleaning large tanks, wells should be sunk; and that tanks should be cleared of all trees and plants growing on their sides. Defœcation and Night Soil.—As a rule Bengal villages have no pucka privies, and the people resort to the jungles, road and tank sides, river-banks, &c., for defœcation, and think nothing of committing nuisances anywhere. Dr. Guptu asserts that this practice is opposed to the primitive Hindu laws of health, prescribed by *Manu*, which directs every man to arise be-times and take his bow and arrow, to go to the outskirts of his place of residence, thence to shoot an arrow, to dig a hole where the arrow alights, to defœcate in it, and to cover the excreta with dry earth. Disposal of the Dead.—The Mussulmans, as a rule, bury their dead within private enclosures even in several villages where burial grounds exist. The Hindus cremate on the banks of the rivers, streams, khals or tanks; in some cases incompletely, the unconsumed parts being thrown into the

water. The Baishnahs and Yogees bury their dead. The throwing of dead bodies into rivers is not uncommon. Intra-village interments and the consigning of corpses, or parts thereof, to water reservoirs cannot be sufficiently condemned. HOUSES AND ROADS.—Houses, with a few exceptions, are all *kutcha*, but the construction varies in different districts. In Burdwan, Birbhum, Bankura, Midnapur, Hughli, Howrah, and the greater part of the 24-Pergunnahs and South Nuddea, the dwellings are constructed of mud walls with roof of straw over a bamboo frame. The floor is of mud, but raised pretty high, and the ventilation is sufficient, although the doors and windows are neither large in size nor sufficient in number; but there is an opening under the eaves for the exit of heated air, while the cold enters by the door. In parts of Murshidabad, Nuddea, Jessore, Khulna, and the south-eastern parts of 24-Pergunnahs the walls of houses are of durmas or mats, or split bamboos, or wattle-and-dab. The ventilation is free—two free for protection against cold winds. The floor being *lepoed* every morning, is more or less damp, although very clean. Few villages have metalled roads; several have good *kutcha* roads; but the great majority have no roads at all but narrow and winding path-ways. DRAINAGE.—The natural drainage of Birbhum, the Ranigunge sub-division in Burdwan, Bankura excepting thannahs Kotulpore and Indas, is good, as the country being undulating, all excess rain water which is not required for cultivation easily runs into the nearest stream, or collects in lagoons, or small streams. The drainage in Howrah, Hughli, Nuddea, Burdwan, Bankura, Birbhum and 24-Pergunnahs is stated to be obstructed to a certain extent by the Railway. Few villages possess *pucka* drains—some have shallow cuttings for carrying off rain water. FOOD-SUPPLY.—This consists of rice, dall or pulse of various kinds, fish, vegetables, milk, ghee, curds, &c., &c., rice forming the staple diet. Wheaten flour is used by the well-to-do in the shape of *chapatis* (hand-bread), baked or fried in ghee. Fish is the only animal food commonly used, goats and kids being consumed very rarely, while fowls and mutton, and even beef, are eaten only by the Mahomedans and those holding heterodox opinions. The lower caste Hindus eat swine, while the Dhangurs and Bowries eat dead rats, snakes and cats. GENERAL HEALTH.—While *fever* was generally prevalent all over the circle, the following places were found to be comparatively free from it, deficient rainfall being assigned as the general cause of the exemption:—

The Sudder sub-division, parts of the Barripore sub-division and the Sunderbun portion of the 24-Pergunnahs. Magura and part of Jhenida in Jessore. The Khulna district generally, which is intersected by numerous rivers and creeks. Almost the whole of the Howrah district as usual.

It is moreover reported that the following places which had suffered epidemically in former years ceased to do so this year:—

The Nuddea district, which had suffered since 1880, excepting the Kushtia sub-division.

The Hughli district, in which several villages had been depopulated more or less.

The Burdwan district, which had suffered from 1870 to 1875.

The Birbhum and Bankura districts, which had been alarmingly invaded, and

The Bongong sub-division in Jessore, which had suffered in common with Nuddea when it formed a portion of that district.

On the other hand the following places suffered more or less virulently from the malady:—

The Baraset sub-division and some parts of the Bussirhat and Barripore sub-divisions in the 24-Pergunnahs.

The town of Jessore, referred to the stagnant Bhyrub river, no action having yet been taken with regard to the proposition to clear and convert it into a flowing stream. Dr. Guptu suggests that the Municipality should keep it free from weeds and moss—which can be done at a small cost.

Some villages in Baitaghata in Khulna.

The Kushtia sub-division in Nuddea, which hitherto escaped the epidemic phase of the disease, was virulently invaded this year.

The Berhampore civil station and some villages here and there in Murshidabad, which were hitherto free from the disease in its epidemic form.

Thannahs Jagatballabpore and Domjor in Howrah.

Thannas Anda and Bishenpore in Bankura.

Cholera was conspicuously fatal in—

Thannahs Khulna and Bagirhat in Khulna.

Thannahs Damurhuda, Chuadanga and Chagda in Nuddea.

The Ulubaria sub-division in Howrah.

Village Sharghat in thannah Goghat in Hughli.

Small-pox prevailed with noticeable severity in—

Several villages in thannahs Goas, Jelinghi and Bhagwangola in Murshidabad. These villages are occupied by a large number of Ferazees, who persistently refuse vaccination.

Thannah Ketugram in Burdwan.

Darjiling Circle.—Dr. J. J. Wood, Deputy Sanitary Commissioner. DWELLINGS.—These in the plains are nearly all situated in unhealthy neighbourhoods, that is near rice fields, or dead water in the shape of marshes, bheels or jungle. They are constructed generally of wattle-and-dab, or have earthen walls. The roofs are thatched. They are often too near one another, with insufficient ventilation and perflation. Although the floors are commonly raised on earthen plinths one or two feet high, they are, as a rule, damp. The rooms are crowded by night. Some of the houses have overhanging roofs and verandahs to keep out the rain. CONSERVANCY.—Is conspicuous by absence, except in towns, where also it is not quite satisfactory. The village path-ways, which generally represent roads, are resorted to for defœcation; sweepings and excreta are not removed to a distance; the surroundings of the houses are in filthy condition; cattle are usually crowded in studs. WATER-SUPPLY.—This varies widely, but is never above suspicion. DISPOSAL OF THE DEAD.—Dead bodies are too often burnt near streams, or buried too near houses, or on the catch-water area of tanks. GENERAL HEALTH.—The health standard of the year 1883-84 was believed to be better than the average. *Cholera* was noticeably severe in the Darjiling Terai, whence a few case spread to the hills. *Small-pox* was not systematically reported, and it is suspected that many cases were not recorded. Most of the cases appeared in the rains in July and August, and the mortality was greatest in October. *Goitre*, *leprosy*, *rheumatism*, *chest-affections* and *dropsy* were noted here and there. SUGGESTIONS.—Dr. Wood suggests that the throwing of dead bodies into running streams should be more vigorously prohibited and a Government reward offered for the removal and burial or burning of such bodies as are found stranded in streams, and that a bhisti should accompany the coolies from Parbatipore on their journey to Assam, to supply them with clean water at the stations through which they pass, as they are much neglected in this respect.

Ranchi Circle.—Dr. Owen, Deputy Sanitary Commissioner, and Prosono Coomar Dey, Deputy Superintendent of Vaccination. VILLAGES.—The vast majority of these do not differ much from each other as regards their sanitary condition, which is not good in many respects. The Deputy Superintendent reports, that of the few villages visited by him only Raghunathpore and Pachamba had fairly good roads, in the others the roads were bad and some had no roads; and that artificial drainage was met with nowhere, the roads serving this purpose. CONSERVANCY.—No arrangements under this head were found to exist by the Deputy Superintendent in any of the villages visited by him. The town of Pachamba and the surroundings of the Bishengarh town were in an unclean and unsatisfactory condition. WATER-SUPPLY.—The drinking-water varied in quality, but in very few places could it be pronounced good or fit for use. Dr. Owen suggests the multiplication of wells to break the habit of resorting to tanks, which are promiscuously used. The water of the streams in Bishengarh town was found by the Deputy Superintendent to be contaminated by the throwing of corpses in them. This was brought to the notice of the Deputy Commissioner of Hazaribagh, with a recommendation for its cessation. FOOD-SUPPLY.—Hazaribagh and Lohardugga suffered from deficient food-supply, owing to failure of crops, but this did not seem to act adversely on the health of the people. As a rule they looked healthy, well nourished and contented. They said that they could get on well enough until the mohwa season, but if this crop failed, their condition would then be bad. REGISTRATION.—This was looked into by the Deputy Sanitary Commissioner in a large number of places;

and by the Deputy Superintendent of Vaccination in a few; and with a few exceptions, the deaths ascertained to have occurred in the villages agreed with the numbers recorded in the registers in the thannahs. ADVICE TO THE PEOPLE.—Wherever Dr. Owen went, he explained to the people the benefits of sanitation and cleanliness, and pointed out to the zemindars, village headmen, chowkidars, and others, what and where defects existed, and insisted on their being rectified. GENERAL HEALTH. The general health of the circle was, on the whole, good, no special prevalence of disease existing anywhere.

Sonthal Pergunnahs Circle.—Assistant Surgeon Probhode Chundra Bose, Deputy Superintendent. WATER-SUPPLY.—In the Sonthal Pergunnahs district the drinking-water supply was found to be seriously contaminated by the practice, extensively carried on, of incompletely burning corpses in the beds of rivers and letting the remains lie there. REGISTRATION.—The deaths occurring in the villages were ascertained at the time the people were collected together for the purpose of verification of vaccine operations performed on them, and the information afterwards compared with the thannah records. The result is not stated. ADVICE TO THE PEOPLE.—Instructions were given to the villagers as to the rectification of the defects found to exist in their villages with regard to their mode of living, housing of cattle, conservancy arrangements, reservation and preservation against pollution of the drinking-water supply, &c. GENERAL HEALTH.—This was found to be good everywere, except in a few villages in the western portion of Khagria outpost in thannah Gogri, where *fever* and *spleen* prevailed to an unusual extent. *Goitre* was also met with.

Eastern Bengal Circle.—Mr. Apothecary Lyons, Deputy Sanitary Commissioner.—This officer's report refers generally to the Dacca, Tipperah and Mymensing districts:—ADVICE TO THE PEOPLE.—In each village, hât and bazar visited, Mr. Lyons delivered "lengthy and earnest addresses on sanitary matters," pointed out defects, and made suitable and practical remedial suggestions. The Magisterial authorities were also made aware of the existence of these defects, and suggestions for their removal were submitted to them. Referring to the apathy generally evinced by the people with regard to sanitary reforms, Mr. Lyons makes the following practical and pointed observations:—"To remedy defects such as I have noticed, sanitary legislation of some sort to meet the requirements of rural dwellings is called for, if the physical welfare of the people is to be espoused. My observations teach me that the people, rich and poor, educated and uneducated, alike, cannot, or will not, actively be-stir themselves in bringing about sanitary reforms. Of this I have the most abundant and convincing proofs. Apathy and long habit combined are fatal to any real improvement taking place spontaneously from within the rural communities. All my hearers, of every condition in life, though seeming to be impressed with the desirability of village sanitary reform, and to admit the evils of the sanitary defects pointed out to them, nevertheless looked at the changes indicated in a half-hearted, helpless sort of way. Whilst discoursing with them, I am invariably met as follows by the acknowledged leaders of the village:—'I can clean my premises, but what of my neighbour's holding? I cannot compel him to clean his!' But say I, 'see the powerful moral effect of example, and the potent influence of consultative village meetings in view to adopting sanitary reforms.' The suggestion falls flat. The *universal verdict*, so far as I have been able to ascertain it, is, that no change can or will be effected without—strange to say it—Government help and interference! If this were said only by the poor and illiterate, there would still be hope, but alas! there is a consensus of opinion on this matter held by literate and illiterate, rich and poor. Wherever I suggested to pancheyets that it was expected that they should exert their influence and authority in introducing sanitary improvements, I was asked to grant them a *perwanna*, to enable them to enforce reforms, without which *no one* would heed them. Strange as it may look, it is none the less true that even the *owner* of a tank has not the moral courage, even if he has the will, to conserve it for drinking purposes alone. Fear of having his house burnt down, or being made the mark of the village, or of having vexatious charges preferred against him, deters him from making innovations against customs and practises that have the sanction of immemorial usage. To one who has studied and knows village life in Eastern Bengal as it is, these are real and not imaginary obstacles, and ones not to be overcome in

the ordinary way; therefore the venture will seldom, if ever, be made, and thus any hope of voluntary sanitary improvement will continue to stand at zero." REGISTRATION.—The usual village enquiries were made and comparison of the information with the thannah registers instituted. The result was seldom satisfactory: the discrepancies being many. But Mr. Lyons is not prepared to say that the chowkidars furnished defective or erroneous information at the thannahs. They may or may not have done so; but, on the other hand, he is disposed to believe that the information gleaned by him at the villages may not be free from error from various causes, such as defective memory of the informants, want of interest in the matter by them, &c. He thinks that nothing short of a special agency will secure reliable statistics. He notices that under a departmental Police order the thannah registers are destroyed after the close of each year, owing to which the events of November and December, ascertained by him in February and March, could not be verified at the thannahs. GENERAL HEALTH.—The general health of the people was found to be good on the whole. Fever of the intermittent type was prevalent, and a considerable number of the people had enlarged spleen. Colic and neuralgia were not uncommon. In a village near the river Megna in thannah Raipura in Dacca an outbreak of cholera, in a somewhat severe form, occurred. Mr. Lyons writes:—"The wonder to my mind is that the health of the people is as good as it is, and that they look as well as they do, seeing their almost indescribably filthy surroundings and unclean habits. It serves to teach me the wonderful adaptability of the human body and its functions to most adverse and adventitious circumstances, and to show that the *vis conservatrix cum medicatrix naturæ* asserts itself with extraordinary varying force according to the degree of habit of body—to put it in another way, one might say 'one man's meat is another man's poison.' "

Orissa Circle.—Mr. Assistant Apothecary, P. Veariah Naidu, Deputy Sanitary Commissioner. This officer visited the largest number of villages. The sanitary defects detected in them are, *mutatis mutandis*, identical in character to those pointed out by the other Deputy Sanitary Commissioners. They need not, therefore, with the exception of his description of the towns of Poori and Balasore and of the Tributary State of Moharbhanj, be reproduced here. The *Poori town* is situated on the shore of the Bay of Bengal, on a sandy plain. The ground in the centre of the town is lower than that of the outskirts. There are single and double storied pucca houses, and also mud ones. Sweepers are provided for the road and other sweepings. The night-soil is buried, and the other refuse is thrown on the sands near the Government school. The latter was reported to the Magistrate, who ordered the discontinuance of the practice. The offerings of food at the temple of Juggurnath are largely consumed by the people. The drinking-water is obtained from wells and tanks. The health of the people is good, except when the town is overcrowded by pilgrims during the festivals. The *Balasore* town is situated on high and open laterite ground on the banks of the Poolari. The people keep themselves and their dwellings clean. There are pucca and kutcha roads and lanes. The side-drains are kept clean. The night-soil and all other refuse is collected and removed to the outskrits of the town and buried. There are six pucca latrines in suitable localities, which, with the urinals, are kept clean. The streets are lighted with kerosine lamps. The dead are either buried or burnt. Drinking-water is obtained from wells and tanks, and the food-supply from markets, which are kept clean and tidy. *Moharbhanj* is situated on high ground between the rivers Surali and Poolari, and surrounded by dense jungle, which renders the place malarious. The inhabitants keep themselves very filthy. There are pucca and kutcha roads, and sweepers are employed by the State to keep the town and its surroundings clean and tidy. The gur (fort) of the Rajah, situated in Baripada, is kept neat and clean. ADVICE TO PEOPLE.—All the defects in sanitation traced were pointed out to the headmen of the villages, and the evils arising therefrom thoroughly explained to them. REGISTRATION.—The usual enquiries were made in each village, and the information obtained tested at the thannahs. The results have not been reported.

Behar Circle.—Assistant Surgeon Mothura Nath Sen, Deputy Sanitary Commissioner. The observations of this officer relate to the Patna, Shahabad and Chumparun districts. VILLAGES.—The villages are situated mostly on raised

ground, surrounded by low, closely-cultivated paddy-fields. The habits of the people are active, but they are intemperate to the extreme, the Brahmins and Rajpoots excepted. DWELLING HOUSES.—The houses are generally mud-walled. This necessitates the digging of deep pits in which every sort of household refuse is thrown, and these pits contain, nearly all the year round, water of the foulest description. The houses and the cattle-sheds are kept clean; the former are very much crowded; the ventilation is very defective; and overcrowding within the houses at night is general. Their floors are damp in the Chumparun district, but in Patna and Shahabad they are not so, except during the rainy season. ROADS.—There are no roads in any village; but there are foot-paths between the houses, and as they are often below the level of the foundations of the houses, they serve the purposes of drains. WATER-SUPPLY.—Well water is used everywhere, tanks being rare. In Chumparun the wells are comparatively shallow, whilst in Patna and Shahabad they are about 22 or 23 feet deep. They have been generally dug in well-raised ground, and most of them are protected by raised masonary rims against the re-entry of spill water into them; but their sourroundings are very filthy, as bathing, washing of cooking utensils, &c., are carried on near them. CONSERVANCY ARRANGEMENTS.—Conservancy arrangements do not exist anywhere. There are no public latrines, so the people defœcate everywhere and anywhere. There are heaps of refuse matter in front of almost every house. The private privies of the better classes consist of well-privies or sundasses. Cattle-dung is extensively accumulated for use as fuel. DISPOSAL OF THE DEAD.—There are no burning ghâts. The dead are removed to the nearest river bank for cremation. The corpses are partially cremated and thrown into the river, in some cases after only disfiguring the face. The burial-grounds are outside the villages, close to them but not near tanks or wells. CLOTHING.—The people are very scantily clothed, and during the cold-weather the lower classes, as a rule, sleep on straw, and many of them for want of other covering, cover their body with the same material. Personal cleanliness is neglected everywhere. FOOD-SUPPLY.—The people live to a great extent on makai. The poorer classes subsist on one meal at night, consisting of rice, dâl and vegetables, taking during the day only a handful of *chattoo* or *chabuni*. ADVICE TO THE PEOPLE.—The following were offerred:—(1) Not to defœcate anywhere within the village, but to resort to the fields outside, at a distance of about 100 yards from dwelling-houses; (2) to utilize the refuse matters as manure and the sweepings for filling up holes and pits; (3) to set apart one or two wells solely for drinking-water; (4) to set apart a plot of land all round the village solely for the cultivation of the rubbi crop; (5) to plant trees. REGISTRATION.—The prescribed procedure on this subject was observed, and discrepancies were detected in 30 villages. The Superintendent found some difficulty in verifying the registration owing to the villagers being very illiterate, and to the chowkidars partly entering the events in their books and partly reporting them orally at the thannahs. Some of the chowkidars were, moreover, not supplied with books. Nevertheless, he is of opinion that the registration of deaths is approximately correct. GENERAL HEALTH.—The general health of the circle was found to be good everywhere. In the Motihari and Dhaka thannahs in Chumparun, a few cases of chronic *fever* were noticed here and there. *Small-pox* broke out during the latter months of the year in the Patna Municipality and in some isolated villages in thannahs Dinapore, Maner, Bikram, Massaudi and Silao in Patna, the Patna town suffering most.

CONCLUSION.

Inspection by Sanitary Commissioner of the work of the Deputy Sanitary Commissioners.

229. I regret that the orders of the Government of India, conveyed in paragraph 5 of Bengal Government letter No. 324 of the 31st January 1884, did not reach me in time to be acted on during the past vaccinating season, but they will have my attention during future seasons. I may say, however, that I have in previous years held as much personal communication with Superintendents during my tours as my inspections in Municipalities would permit me to afford.

Impracticability of submitting the Report on 1st May—later date should be fixed.

230. I also regret the delay in the submission of this Report, but the time allowed for the collection and analysis of the vaccination statistics of this great Province is quite insufficient. The season ends with the 31st March,

so that individual vaccinators cannot close their returns before the 6th April. Between this date and the 1st May the returns have to pass from the hands of the vaccinators into those of the Inspectors to be checked by them and by the Deputy Superintendents, and then to be forwarded to the head-quarters of each circle, where they are compiled in the Superintendents' offices, who are also required to prepare exhaustive reports. These reports are then sent to the Sanitary Commissioner's office, where the whole statistics of the Province are compiled and reported on, and then printed for submission to Government by 1st May. In this period of 25 days three transmissions by post occur, the first from many of the most remote and inaccessible corners of districts, where communication is slow, the letters being carried by dâk runners. Given every vaccinator at his post on the 6th April and in good health, every Inspector in a particular appointed spot on a certain day to receive returns—none of which require to be returned for correction—no mistakes or delays in the post office, no outbreaks of small-pox requiring urgent attention on the part of any subordinate or superior officer, there would then be almost an impossibility in meeting the requirements of the Government of India with regard to the submission of this section of the Report, even if the conditions above sketched were ever likely to be fulfilled. The returns are now received monthly to facilitate matters as much as possible, but sufficient time should be given to deal carefully with such a mass of important statistics which in time would become a valuable scientific record. I am unwilling to bring much more pressure on the vaccination establishment, as I find evils arising thereby. To meet the requirement of early submission of the Report, the vaccinating season is being curtailed, so that compilation of returns may begin quite a week or so earlier than the 31st March, and even then are closed without proper inspection of results; and if received imperfect, would hardly be returned for correction by Inspectors, thus destroying their value. There is therefore established a tendency to submit incorrect or falsified returns. There is another evil arising from this insistence on early submission of returns, and this is, that during the period employed in their compilation all other duties are neglected. To avoid delay in their submission this season, I found that the Deputy Superintendent, Sonthal Pergunnah Circle, employed the first fifteen days of April 1884 entirely in attention to this duty, at a time when small-pox was prevalent in his circle and requiring his constant attention and supervision. I beg the Government will urge upon the Government of India the necessity of granting longer time, and fixing a later date for the submission of my Report. It is necessary both in the interests of public health and of correct and truthful statistics.

The last returns and reports of the season under review were not received in my office from the Eastern Bengal Circle till the 17th May.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

The 23*rd June* 1884.

APPENDIX No. I.

VITAL STATISTICS OF THE DISTRICTS IN BENGAL

FOR THE YEAR 1883.

ANNUAL FORM NO. I.—BIRTHS *registered in the principal Municipalities and Towns in the Districts of the Bengal Province during the year* 1883.

1	2	3	4	5			6			7	8	9
Districts	Number	Municipalities and Towns	Population according to Census of 1881	Number of Births Registered			Ratio of Births per 1,000 of Population			Number of males born to every 100 females born	Excess of births over deaths per 1,000 of population	Excess of deaths over births per 1,000 of population
				Male	Female	Total	Male	Female	Total			
Burdwan	1	Burdwan	34 080	501	465	966	14 70	13 64	28 34	107		17 11
Bankura	2	Bankura	18 747	[illegible]	[illegible]	625	17 14	17 8	34 92	101	7 57	
	3	Bishenpur	21 283	244	251	495	11 46	11 79	23 25	97		14 71
Midnapore	4	Midnapore	33 560	268	250	518	7 98	7 44	15 43	107		12 13
Hughli	5	Hughli and Chinsurah	38 718	414	388	802	10 69	10 02	20 71	106		5 63
Serampore	6	Serampore	20 406	388	322	710	11 64	12 15	[illegible]	120		3 85
	7	Utterparah	5 710	60	54	114	10 88	9 80	20 68	111		10 35
Howrah	8	Howrah	105 628	1 063	898	1 961	10 06	8 40	18 47	119		4 55
24 Pergunnahs	9	Suburbs of Calcutta	2 1 433	[illegible]	2 3[illegible]	4 [illegible]09	10 47	9 40	19 88	111		23 20
	10	Busirhat	2[illegible] 1 0	3 8	232	5[illegible]0	16 03	11 34	27 39	141		3 76
Nuddea	11	Kishnaghur	27 477	260	219	479	9 46	7 97	17 43	118		26 17
	12	Santipore	29 087	312	264	576	10 [illegible]	8 83	19 10	118		10 64
	13	Ranaghat	8 683	64	51	115	7 77	5 8[illegible]	13 [illegible]4	1[illegible]		11 29
Jessore	14	Jessore	8 [illegible]	[illegible]	4[illegible]	82	4 [illegible]9	5 [illegible]	[illegible]	90		23 25
Rajshahye	15	Bauleah	19 731	127	97	2[illegible]4	6 41	4 [illegible]	11 [illegible]1	130		8 90
Darjiling	16	Darjiling	7 9[illegible]6	32	1[illegible]	[illegible]	4 01	2 38	6 40	1[illegible]8		15 41
Dacca	17	Dacca	80,1[illegible]1	[illegible]	7[illegible]4	1 [illegible]	11 16	9 [illegible]	20 [illegible]7	118		3 33
Faridpore	18	Faridpore	10 63[illegible]	[illegible]1	[illegible]5	10[illegible]	4 [illegible]	[illegible]	10 32	92		25 04
Mymensing	19	Jamalpore	13 [illegible]91	289	[illegible]	[illegible] 1	1[illegible] [illegible]0	1[illegible] [illegible]8	34 21	110	7 60	
Tipperah	20	Comillah	1[illegible]	21[illegible]	170	[illegible]	[illegible]	[illegible]	28 25	124	8 81	
	21	Brahmanbariah	17 543	34[illegible]	[illegible]	[illegible]87	1[illegible] 4[illegible]	[illegible]	[illegible] 16	139	8 [illegible]5	
Chittagong	22	Chittagong	22,130	[illegible]87	198	485	1[illegible] 06	8 [illegible]4	21 01	145	1 40	
Patna	23	Patna	160 237	1 8[illegible]8	1 496	3 [illegible] 1	11 [illegible]8	9 32	20 [illegible]0	1[illegible]4		11 88
	24	Behar	48 971	835	651	1 [illegible] 6	17 [illegible]5	17 [illegible]7	[illegible]	99	9 84	
	25	Barh	[illegible]3 [illegible]10	1[illegible]	164	[illegible]	8 [illegible]	[illegible] 94	16 37	122	1 65	
	26	Mokameh	13 722	2 0	21[illegible]	4 5	18 21	1[illegible]	33 88	118	4 15	
	27	Futwa	21 [illegible]4	1[illegible]	108	2[illegible]	7 [illegible]5	5 1[illegible]	1[illegible] 47	143	1 94	
Gya	28	Gya	76 121	1 1[illegible]8	1 079	2 [illegible]37	1[illegible] [illegible]1	14 17	[illegible] 38	107		17 59
Shahabad	29	Arrah	43 [illegible]	[illegible]	[illegible]5	1 [illegible]41	1[illegible] 64	[illegible]	[illegible]	121	8 88	
Mozufferpore	30	Mozufferpore	42 742	3[illegible]3	283	646	8 4[illegible]	6 [illegible]	1[illegible] 11	1[illegible]8		7 89
	31	Sitamurhi	6 125	10[illegible]	92	19[illegible]	16 [illegible]2	1[illegible] 0[illegible]	31 34	108	1 14	
Durbhanga	32	Durbhanga	6[illegible] 096	86[illegible]	7[illegible]	1 6[illegible]	13 14	11 18	24 3[illegible]	117		2 59
Sarun	33	Chuprah	53 2[illegible]	66[illegible]	6[illegible]8	1,[illegible]77	12 [illegible]	11 41	[illegible]3 [illegible]	110	3 01	
	34	Revilgunge	12 [illegible]03	258	208	466	20 [illegible]5	16 64	[illegible]7 30	124	12 33	
Chumparun	35	Bettiah	21 [illegible]3	3[illegible]2	286	648	17 02	1[illegible]	[illegible]0 47	128	13 56	
Monghyr	36	Monghyr	57 5[illegible]0	501	472	97[illegible]	8 71	8 [illegible]0	1[illegible] 91	106		5 91
	37	Jamalpore	13 563	348	31[illegible]	667	[illegible]	[illegible]	[illegible] 17	109	17 03	
	38	Shaikpurah	1[illegible] 517	133	130	2[illegible]	10 [illegible]3	1[illegible] 38	[illegible]1 01	102		80
Bhagulpore	39	Bhagulpore	57,4[illegible]3	99[illegible]	911	1 9[illegible]	17 [illegible]8	1[illegible] [illegible]7	[illegible]	108		52
Purneah	40	Purneah	15 016	80	91	170	5 [illegible]2	[illegible] 3[illegible]	11 32	109		22 64
Cuttack	41	Cuttack	4[illegible] 239	[illegible]	1[illegible]9	404	[illegible] 15	3 [illegible]8	9 34	140		4 05
	42	Kendrapara	15 097	213	188	401	13 [illegible]8	11 97	25 54	113	2 42	
	43	Jajpore	11 233	65	73	1[illegible]8	5 78	6 [illegible]	12 [illegible]8	89		6 32
Poori	44	Poori	24 202	234	207	441	9 2[illegible]	8 [illegible]	17 74	108		22 43
Lohardugga	45	Ranchi	18 443	115	106	221	6 23	5 74	11 [illegible]8	1[illegible]8		2 55
Manbhum	46	Purulia	9 304	64	[illegible]0	114	6 87	5 37	1[illegible] 24	1[illegible]8		38
		TOTAL	1,685,15[illegible]	19 872	17 313	37 21[illegible]	11 7[illegible]	10 [illegible]9	22 08	114		7 87

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 18*th April* 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon General,
Sanitary Commissioner for Bengal.

Annual Form No. II.—*Deaths registered in the* **DISTRICTS** *of the Bengal Province during the year* 1883.

1	2	3	4	5	6			7	8			9		
Number.	Districts.	Population according to Census of 1881.	Area in square miles.	Average population per square mile.	Number of Deaths registered.			Number of males died to every 100 deaths of females.	Ratio of Deaths per 1,000 of population.			Mean Ratio of Deaths per 1,000 during previous five years.		
					Male.	Female.	Total.		Male.	Female.	Total.	Male.	Female.	Total.
	Burdwan Division.													
1	Burdwan	1,391,823	2,697	516·06	20,307	18,785	39,092	108	30·38	25·06	28·08	31·29	25·75	28·41
2	Bankura	1,041,752	2,621	397·46	11,004	10,117	21,121	108	21·60	18·92	20·27	20·36	17·63	18·90
3	Birbhum	794,428	1,756	452·40	10,638	9,996	20,634	106	27·88	24·21	25·97	27·37	23·18	25·19
4	Midnapore	2,517,802	5,082	495·44	27,730	24,116	51,846	114	22·28	18·93	20·59	19·75	16·03	17·86
5	Hughli	660,813	880	750·92	7,262	6,943	14,205	104	23·08	20·05	21·49	20·13	16·60	18·28
6	Serampore	351,955	343	1,026·11	3,242	2,698	5,940	120	18·59	15·19	16·87	21·23	17·23	19·21
	Total of Hughli, including Serampore	1,012,768	1,223	828·10	10,504	9,641	20,145	109	21·48	18·40	19·89	20·52	16·81	18·60
7	Howrah	635,381	476	1,334·83	6,574	5,571	12,145	118	20·77	17·46	19·11	19·77	14·96	17·36
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	1,618,420	2,097	771·78	17,905	14,498	32,403	123	21·61	18·34	20·02	23·36	18·37	20·92
	Suburbs of Calcutta ...	251,439	23	10,932·13	6,410	4,422	10,832	144	43·54	42·42	43·08	52·14	53·01	52·50
	Total of 24-Pergunnahs	1,869,859	2,120	882·00	24,315	18,920	43,235	128	24·02	21·15	23·12	27·70	22·41	25·17
9	Nuddea	1,655,721	2,755	600·98	32,695	27,031	59,726	120	40·57	31·60	36·07	41·39	32·71	36·93
10	Jessore	1,939,375	2,925	663·03	28,521	23,927	52,448	119	29·73	24·41	27·04	25·24	19·91	22·55
11	Murshidabad	1,226,790	2,144	572·20	16,521	13,746	30,267	120	28·16	21·46	24·67	30·14	23·29	26·04
12	Khulna	1,079,948	2,077	519·96	12,518	10,549	23,067	118	22·02	20·62	21·35	23·90	23·89	23·90
	Rajshahye Division.													
13	Dinagepore	1,514,346	4,118	367·74	16,482	12,318	28,800	131	21·06	16·82	19·01	23·18	17·53	20·45
14	Rajshahye .. .	1,338,638	2,361	566·98	23,275	20,715	43,990	112	35·25	30·53	32·86	27·95	20·61	24·23
15	Rungpore	2,097,964	3,486	601·83	20,818	17,240	38,058	120	19·49	16·73	18·14	16·32	12·15	14·23
16	Bogra	734,358	1,498	490·23	8,556	7,331	15,887	116	22·05	20·26	21·63	20·07	16·17	18·15
17	Pubna	1,311,728	1,847	710·19	16,926	15,222	32,148	111	26·10	22·04	24·50	14·57	10·93	12·75
18	Darjiling	156,137	1,234	126·53	1,121	614	1,735	182	12·53	9·20	11·11	7·79	5·92	5·99
19	Julpaiguri	581,562	2,884	201·65	6,002	4,816	10,818	124	19·64	17·44	18·60	15·15	12·58	13·94
	Dacca Division.													
20	Dacca	2,116,350	2,797	756·65	22,184	19,264	41,448	115	21·45	17·79	19·58	18·10	14·20	16·11
21	Faridpore	1,631,734	2,267	719·78	11,495	9,332	20,827	123	14·26	11·30	12·76	13·25	9·49	11·35
22	Backergunge	1,900,889	3,649	520·98	23,878	21,373	45,251	111	24·52	23·04	23·80	16·31	13·71	14·93
23	Mymensing	3,0[illegible],966	6,287	485·44	19,846	16,002	35,848	124	12·77	10·67	11·74	7·56	5·41	5·50
	Chittagong Division.													
24	Chittagong	1,132,341	2,567	441·11	8,690	7,452	16,142	116	16·34	12·40	14·25	19·57	13·95	16·59
25	Noakhalli	820,772	1,641	500·17	7,678	6,634	14,312	117	18·49	16·35	17·43	17·42	14·05	16·20
26	Tipperah	1,519,338	2,491	609·93	11,888	9,669	21,557	122	15·43	12·91	14·18	11·66	8·96	10·33
	Patna Division.													
27	Patna	1,756,856	2,079	845·05	20,268	18,365	38,633	110	23·60	20·44	21·98	27·42	23·42	25·26
28	Gya	2,124,682	4,712	450·91	23,446	21,482	44,928	109	22·52	19·86	21·14	18·12	14·93	16·49
29	Shahabad	1,964,909	4,365	450·15	20,227	16,703	36,930	121	21·28	16·46	18·79	15·61	11·90	13·71
30	Mozufferpore	2,582,060	3,003	859·83	18,881	14,642	33,523	128	14·91	11·12	12·98	16·44	11·70	14·03
31	Durbhanga	2,633,447	3,335	789·64	19,532	16,043	35,575	121	15·07	11·99	13·50	14·20	9·85	11·99
32	Sarun	2,280,382	2,622	869·71	20,045	14,927	34,972	134	18·59	12·47	15·33	15·06	10·70	12·43
33	Chumparun	1,721,608	3,531	487·57	14,542	11,096	25,638	131	16·70	13·03	14·88	12·99	9·29	11·16
	Bhagulpore Division.													
34	Monghyr	1,969,774	3,921	502·37	10,799	8,777	19,576	123	11·13	8·77	9·93	16·39	12·89	14·62
35	Bhagulpore	1,966,158	4,268	460·67	19,064	15,820	34,880	120	19·46	16·03	17·74	17·30	13·35	15·32
36	Purneah	1,848,687	4,956	373·02	18,247	14,270	32,517	127	19·47	15·54	17·58	21·28	16·91	19·10
37	Maldah	710,448	1,891	375·70	7,329	5,512	12,841	132	21·12	15·19	18·07	22·05	15·69	18·95
38	Sonthal Pergunnahs .	1,568,093	5,456	287·41	10,976	8,672	19,648	126	13·97	11·07	12·52	11·46	8·81	10·14
	Orissa Division.													
39	Cuttack	1,795,065	3,633	494·00	15,757	13,887	29,644	113	17·95	15·13	16·51	21·28	18·73	19·98
40	Poori	888,487	2,473	359·27	9,609	8,410	18,019	114	21·51	19·03	20·28	22·23	20·27	21·34
41	Balasore	945,280	2,066	457·54	10,888	9,750	20,638	111	23·59	20·15	21·83	23·65	19·91	21·73
	Chota Nagpore Division.													
42	Hazaribagh	1,104,742	7,021	157·35	9,961	8,932	18,893	113	18·28	15·95	17·10	14·15	11·19	12·65
43	Lohardugga	1,609,244	12,045	133·60	14,493	12,208	26,701	118	18·19	14·02	16·59	19·84	16·18	17·99
44	Singbhum	561,964	4,336	129·60	4,452	3,509	7,961	126	15·84	12·48	14·16	15·31	12·62	13·96
45	Manbhum	1,058,228	4,147	255·18	7,503	6,109	13,612	122	14·28	11·46	12·86	12·77	9·78	11·26
	Total for the Province	66,163,884	144,863	456·73	676,175	569,501	1,245,676	118	20·59	17·08	18·82	18·74	14·79	16·75

Office of the Sany. Commr. for Bengal,

The 18*th April* 1883.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. III.—*Deaths registered in the Districts of the Bengal Province during* EACH MONTH *of the year* 1883.

1	2	3												4
Number.	DISTRICTS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL DEATHS REGISTERED DURING THE YEAR.
	Burdwan Division.													
1	Burdwan	4,527	3,760	4,047	3,923	2,967	2,488	2,383	2,470	2,709	2,959	3,421	3,339	39,002
2	Bankura	2,233	1,828	1,802	1,785	1,328	1,046	1,169	1,935	1,965	2,034	2,054	1,942	21,121
3	Birbhum	1,909	1,386	1,476	1,449	1,072	764	1,158	2,328	2,477	2,068	2,362	2,185	20,634
4	Midnapore	5,208	4,474	4,291	3,975	3,140	2,746	3,287	3,740	4,067	4,509	5,624	6,790	51,846
5	Hughli	1,769	1,318	1,413	1,194	802	718	880	965	1,066	1,130	1,519	1,431	14,205
6	Serampore	677	505	452	508	398	234	308	400	466	475	681	836	5,940
	Total of Hughli, including Serampore	2,446	1,823	1,865	1,702	1,200	952	1,188	1,365	1,532	1,605	2,200	2,267	20,145
7	Howrah	1,338	971	850	797	658	508	588	833	984	1,369	1,677	1,672	12,145
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	4,526	2,811	2,783	2,711	1,885	1,482	1,696	2,110	2,358	2,532	3,466	4,043	32,403
	Suburbs of Calcutta	1,357	1,003	1,106	908	830	590	583	636	558	863	1,381	1,017	10,832
	Total of 24-Pergunnahs ...	5,883	3,814	3,889	3,619	2,715	2,072	2,279	2,746	2,916	3,395	4,847	5,060	43,235
9	Nuddea	6,608	4,220	4,807	6,219	4,676	2,965	2,711	3,207	3,991	5,180	7,347	7,800	59,726
10	Jessore	6,366	3,614	4,101	4,498	3,549	2,409	2,505	2,679	3,192	4,181	7,166	8,088	52,448
11	Murshidabad	2,734	2,008	2,279	2,789	2,339	1,425	1,611	1,974	2,572	3,034	4,020	3,487	30,267
12	Khulna	2,430	1,534	1,728	1,853	1,375	1,020	1,338	1,458	1,756	1,884	3,236	3,455	23,067
	Rajshahye Division.													
13	Dinagepore	2,577	2,462	2,266	2,297	2,484	2,231	2,017	2,142	3,294	2,220	2,610	3,200	28,800
14	Rajshahye...	3,725	2,596	2,498	3,995	2,611	1,862	2,717	2,818	3,820	3,846	6,084	7,418	43,990
15	Rungpore	2,770	2,042	2,109	2,063	2,362	2,424	2,839	3,104	3,911	3,581	4,818	6,040	38,058
16	Bogra	1,490	1,130	1,196	1,175	1,224	1,014	1,402	1,270	1,313	1,329	1,642	1,696	15,887
17	Pubna	2,890	1,523	1,496	1,873	1,582	1,326	1,891	2,080	2,290	2,838	5,636	6,723	32,148
18	Darjiling	105	88	113	118	181	311	321	122	104	94	84	94	1,735
19	Julpaiguri...	820	647	630	730	1,421	1,518	1,213	716	661	723	911	828	10,818
	Dacca Division.													
20	Dacca	5,423	3,277	2,864	3,310	2,478	1,876	2,244	2,230	2,543	3,143	5,291	6,769	41,448
21	Faridpore	2,217	1,126	1,137	1,192	904	749	825	955	1,138	1,931	3,556	5,067	20,827
22	Backergunge	5,242	3,505	3,384	3,539	3,440	2,316	2,395	2,364	2,530	3,292	5,056	8,189	45,251
23	Mymensing	3,829	2,838	2,873	2,429	3,375	2,669	2,579	2,477	2,614	2,706	3,540	3,019	35,848
	Chittagong Division.													
24	Chittagong	1,750	1,508	1,382	1,055	1,464	1,244	1,281	1,266	1,194	1,190	1,278	1,530	16,142
25	Noakhalli	1,495	1,344	1,397	1,095	1,045	966	1,054	962	905	1,035	1,350	1,664	14,312
26	Tipperah	2,397	1,947	2,009	1,990	2,008	1,822	1,227	1,341	1,485	1,043	1,966	2,222	21,557
	Patna Division.													
27	Patna	2,446	2,079	1,973	3,431	3,076	3,080	4,120	4,511	3,796	3,801	3,069	3,161	38,633
28	Gya	2,004	1,565	1,820	2,273	2,687	4,190	6,826	7,847	5,022	4,275	3,321	3,008	44,928
29	Shahabad	2,239	1,889	1,781	2,013	3,388	4,885	4,905	4,807	3,399	2,811	2,592	2,221	36,930
30	Mozufferpore	2,304	1,881	2,012	1,985	2,554	3,532	2,611	2,764	2,983	4,336	3,615	2,946	33,523
31	Durbhanga	2,065	2,235	2,218	2,536	3,350	4,507	2,791	2,710	3,045	3,337	3,578	3,143	35,575
32	Sarun	2,271	2,232	2,236	2,452	2,715	3,269	3,137	3,581	3,230	3,165	3,247	3,437	34,972
33	Chumparun	1,664	1,520	1,604	2,315	2,156	2,036	2,228	2,065	2,743	2,073	2,547	2,687	25,638
	Bhagulpore Division.													
34	Monghyr	1,277	1,119	1,256	1,537	1,142	1,423	1,788	2,333	1,927	1,989	1,949	1,836	19,576
35	Bhagulpore	2,033	2,026	2,240	2,703	2,469	2,890	2,912	3,317	3,430	3,492	3,988	3,380	34,880
36	Purneah	3,496	2,061	2,788	3,002	2,590	2,155	1,977	1,783	2,064	2,668	3,676	3,657	32,517
37	Maldah	1,437	988	1,042	1,714	1,427	685	691	664	782	732	1,298	1,381	12,841
38	Sonthal Pergunnahs	1,247	1,138	1,099	1,472	1,414	1,487	1,658	2,286	2,059	2,039	1,926	1,823	19,648
	Orissa Division.													
39	Cuttack	3,305	2,941	2,910	2,390	1,887	1,678	2,207	2,325	2,423	2,141	2,410	2,928	29,644
40	Poori	1,786	1,606	1,541	1,339	1,229	1,102	1,742	1,534	1,236	1,257	1,153	2,194	18,019
41	Balasore	2,379	2,240	2,045	1,841	1,629	1,295	1,411	1,371	1,249	1,390	1,740	2,048	20,638
	Chota Nagpore Division.													
42	Hazaribagh	880	923	900	1,256	1,259	1,377	1,623	2,324	2,310	2,302	1,852	1,738	18,893
43	Lohardugga	1,568	1,626	1,946	2,168	2,111	2,014	2,447	3,034	2,846	2,042	2,262	2,087	26,701
44	Singbhum	671	712	655	781	658	566	574	673	692	596	651	741	7,961
45	Manbhum	786	763	974	1,540	1,157	912	1,213	1,496	1,460	1,243	1,054	1,014	13,012
	TOTAL FOR THE PROVINCE ...	114,446	87,684	89,628	98,218	90,401	83,360	91,173	100,169	101,659	108,138	134,038	146,722	1,245,676
	RATIO OF DEATHS PER 1,000 OF POPULATION IN EACH MONTH.	1·72	1·32	1·35	1·48	1·30	1·25	1·37	1·51	1·53	1·63	2·02	2·21	18·82

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 18*th April* 1884

R. LIDDERDALE, M.D.,
Deputy Surgeon-General.
Sanitary Commissioner for Bengal

ANNUAL FORM No. IV – *Deaths registered according to* **AGE** *in the Districts of the Bengal Province during the year* 1883.

1	2	3		4		5		6		7		8		9		10		11		12	
		UNDER 1 YEAR		1 AND UNDER 5 YEARS		5 AND UNDER 10 YEARS		10 AND UNDER 15 YEARS		15 AND UNDER 20 YEARS		20 AND UNDER 30 YEARS		30 AND UNDER 40 YEARS		40 AND UNDER 50 YEARS		50 AND UNDER 60 YEARS		60 YEARS AND UPWARDS.	
Number.	DISTRICTS.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	Burdwan Division																				
1	Burdwan	2,311	1,994	[illegible]	[illegible]	1,302	1,190	1,057	72[illegible]	1,17[illegible]	1,19[illegible]	2,979	2,711	2,92[illegible]	2,17[illegible]	2,718	2,266	1,969	1,901	2,503	3,143
2	Bankura	1,22[illegible]	1,044	1,1[illegible]0	1,1[illegible]0	1,1[illegible]0	848	612	45	658	541	1,355	1,13[illegible]	1,304	1,061	1,283	1,012	1,045	1,099	1,98[illegible]	1,588
3	Birbhum	1,[illegible]84	959	1,001	[illegible]	1,033	818	[illegible]	370	[illegible]	561	1,115	1,147	1,314	1,145	1,465	1,261	1,117	1,122	1,210	1,493
4	Midnapore	2,710	2,418	2,3[illegible]8	2,[illegible]50	1,748	1,10[illegible]	[illegible]	9[illegible]8	1,57[illegible]	1,36[illegible]	3,730	3,270	3,918	2,[illegible]2	3,155	2,509	2,030	2,556	3,937	4,118
5	Hughli	70[illegible]	78	[illegible]1	[illegible]4[illegible]	43[illegible]	378	3[illegible]	283	452	44	1,047	1,118	1,06[illegible]	833	1,00[illegible]	900	801	70[illegible]	834	1,041
6	Serampore	4[illegible]	[illegible]	3[illegible]2	28	193	178	116	97	168	1[illegible]	467	43[illegible]	442	33[illegible]	420	274	319	241	387	378
	Total of Hughli including Serampore	1,136	914	933	928	632	556	446	380	620	58	1,514	1,55[illegible]	1,[illegible]11	1,22[illegible]	1,426	1,174	1,1[illegible]4	1,004	1,271	1,419
7	Howrah	93[illegible]	7[illegible]8	716	752	49[illegible]	414	[illegible]52	207	918	311	803	728	687	488	667	418	561	460	949	1,083
	Presidency Division																				
8	24 Pergunnahs exclusive of Suburbs of Calcutta	1,[illegible]40	1,[illegible]38	2,135	2,006	1,857	1,453	1,283	914	1,331	1,203	2,284	2,002	2,123	1,487	1,745	1,101	1,385	1,079	2,172	1,868
	Suburbs of Calcutta	947	71[illegible]	518	49[illegible]	271	226	270	180	498	28[illegible]	1,268	68[illegible]	1,040	470	584	350	468	380	566	626
	Total of 24-Pergunnahs	2,[illegible]87	2,101	2,653	2,[illegible]50	2,128	1,679	1,513	1,094	1,819	1,493	3,552	2,688	3,163	1,957	2,329	1,451	1,853	1,459	2,738	2,494
9	Nuddea	2,783	1,848	3,939	2,[illegible]0[illegible]	4,[illegible]54	3,715	3,092	1,900	2,015	1,492	3,[illegible]79	3,117	3,214	3,391	3,274	2,[illegible]97	2,649	2,225	3,[illegible]68	4,332
10	Jessore	1,[illegible]87	1,5[illegible]4	3,[illegible]11	3,[illegible]	3,[illegible]60	[illegible]79[illegible]	2,2[illegible]	1,448	1,770	1,647	3,115	[illegible]844	3,203	2,[illegible]51	3,0[illegible]4	2,278	2,703	2,171	3,769	3,519
11	Murshidabad	1,[illegible]71	1,[illegible]5	1,8[illegible]	1,[illegible]88	1,813	1,365	1,[illegible]1	[illegible]7[illegible]	1,015	[illegible]	2,323	1,8[illegible]4	[illegible]101	1,[illegible]10	1,775	1,374	1,342	1,33[illegible]	1,48[illegible]	1,698
12	Khulna	1,406	1,1[illegible]	1,743	1,[illegible]3	1,280	976	766	663	892	9[illegible]	1,344	1,353	1,316	1,04[illegible]	1,134	780	1,099	883	1,489	1,337
	Rajshahye Division																				
13	Dinagepore	1,974	1,16[illegible]	1,270	1,16[illegible]	1,275	877	1,148	746	1,112	1,014	2,339	2,048	2,621	1,732	2,150	1,43[illegible]	1,612	1,099	1,377	1,039
14	Rajshahye	1,318	1,5[illegible]	[illegible]21	3[illegible]	3,[illegible]00	2,411	1,7[illegible]3	1,018	1,410	1,[illegible]4	3,082	3,124	3,108	2,48[illegible]	[illegible]578	1,940	1,433	1,398	1,752	1,885
15	Rungpore	1,[illegible]1[illegible]	1,11[illegible]	2,[illegible]11	2,01[illegible]	1,[illegible]52	1,3[illegible]	1,[illegible]6[illegible]	81[illegible]	1,128	1,2[illegible]	2,[illegible]01	2,7[illegible]4	3,38[illegible]	2,[illegible]0	2,[illegible]09	1,847	1,[illegible]5	1,417	2,447	2,059
16	Bogra	1,1[illegible]2	[illegible]00	1,0[illegible]	1,041	747	58	[illegible]81	2[illegible]5	336	478	1,0[illegible]	1,13[illegible]	1,264	930	985	6[illegible]2	646	557	936	784
17	Pubna	1,6[illegible]2	1,[illegible]	2,58[illegible]	[illegible]2	2,100	1,847	98	6[illegible]	607	658	1,3[illegible]	1,162	1,710	1,31[illegible]	1,706	1,1[illegible]4	1,37[illegible]	1,014	2,439	2,634
18	Darjiling	6[illegible]	[illegible]1	1[illegible]1	[illegible]1	78	54	5[illegible]	[illegible]	102	7	[illegible]82	10[illegible]	1[illegible]7	87	130	[illegible]3	7[illegible]	[illegible]4	39	42
19	Julpigori	590	41	400	370	552	205	27[illegible]	26[illegible]	338	42[illegible]	757	707	905	714	916	640	788	597	527	394
	Dacca Division																				
20	Dacca	3,[illegible]20	2,[illegible]	3,007	2,[illegible]71	2,005	1,479	1,148	8[illegible]1	859	993	2,046	3,[illegible]1	2,224	2,011	2,143	1,495	1,614	1,172	3,029	3,840
21	Furidpore	[illegible]9	7[illegible]	1,1[illegible]	1,100	1,027	808	5[illegible]7	442	553	6[illegible]	1,424	1,104	1,404	1,11[illegible]	1,419	864	1,116	764	1,[illegible]48	1,165
22	Backergunge	[illegible]3	[illegible]	3,4[illegible]	2,911	2,31[illegible]	1,7[illegible]8	1,0[illegible]	71	71[illegible]	1,11[illegible]	1,901	2,711	1,907	1,[illegible]5[illegible]	1,9[illegible]6	1,358	1,7[illegible]3	1,294	3,563	3,338
23	Mymensing	1,[illegible]7	1,[illegible]0	1,08[illegible]	1,85[illegible]	1,62[illegible]	1,185	1,0[illegible]	716	96	1,141	2,34[illegible]	2,270	2,706	1,903	2,463	1,470	1,801	1,307	2,861	2,488
	Chittagong Division																				
24	Chittagong	81[illegible]	63[illegible]	871	9[illegible]	603	506	481	33[illegible]	469	47[illegible]	98[illegible]	977	1,13[illegible]	900	1,093	688	1,027	744	1,219	1,357
25	Noakhally	1,5[illegible]	1,18[illegible]	93[illegible]	873	[illegible]8[illegible]	474	4[illegible]1	290	323	40[illegible]	632	[illegible]15	701	611	660	462	500	459	1,266	1,007
26	Tipperah	1,818	1,[illegible]03	1,135	1,0[illegible]2	818	653	[illegible]8	53[illegible]	6[illegible]	674	1,451	1,470	1,341	1,0[illegible]0	1,181	764	1,029	735	1,772	1,497
	Patna Division.																				
27	Patna	4,[illegible]94	4,062	3,300	3,01[illegible]	1,215	99[illegible]	67[illegible]	673	613	675	1,864	1,557	1,689	1,372	1,796	1,450	1,862	1,649	2,521	3,097
28	Gya	3,8[illegible]	3,111	4,091	3,[illegible]	1,72[illegible]	1,146	1,014	82[illegible]	821	846	2,317	2,130	2,2[illegible]5	2,242	2,284	2,005	2,167	2,052	2,837	2,948
29	Shahabad	3,[illegible]3	2,[illegible]18	2,91[illegible]	2,648	1,[illegible]78	1,003	945	60[illegible]	808	717	2,15[illegible]	1,856	2,174	1,61[illegible]	1,906	1,415	1,677	1,358	2,438	2,698
30	Mozufferpore	1,011	857	[illegible]358	2,054	1,[illegible]6	1,1[illegible]8	1,004	617	1,06[illegible]	639	2,[illegible]09	1,919	2,677	1,78[illegible]	2,125	1,697	2,081	1,906	1,941	2,123
31	Durbhunga	1,[illegible]	1,127	2,87[illegible]	2,[illegible]54	2,1[illegible]	1,370	1,17[illegible]	748	1,01[illegible]	842	2,378	1,967	2,403	1,893	2,158	1,56[illegible]	1,847	1,563	2,271	2,430
32	Sarun	3,[illegible]1	2,1[illegible]	2,[illegible]48	1,983	1,28[illegible]	842	1,066	6[illegible]	1,11[illegible]	810	2,01[illegible]	1,38[illegible]	2,203	1,590	2,090	1,[illegible]70	1,9[illegible]2	1,784	2,094	2,271
33	Chumparun	[illegible]31	1,6[illegible]	1,931	1,407	977	640	687	413	649	600	1,507	1,373	1,716	1,278	1,565	1,104	1,429	1,057	1,776	1,619
	Bhagulpore Division.																				
34	Monghyr	1,27[illegible]	1,018	1,716	1,538	8[illegible]4	614	53[illegible]	360	428	315	1,104	864	1,104	780	1,154	812	1,139	999	1,436	1,467
35	Bhagulpore	3,0[illegible]	2,057	2,145	1,942	1,[illegible]1[illegible]	900	883	485	880	626	2,614	2,084	2,604	1,970	2,[illegible]33	1,755	1,639	1,777	1,458	1,580
36	Purneah	1,[illegible]0	1,0[illegible]	1,846	1,570	1,374	978	1,070	716	976	760	3,1[illegible]	2,[illegible]49	3,256	2,154	2,307	1,566	1,519	1,196	1,414	1,637
37	Maldah	[illegible]1	41[illegible]	9[illegible]1	[illegible]71	[illegible]3	478	603	295	371	344	1,122	920	1,031	651	701	492	486	364	761	684
38	Sonthal Pergunnahs	1,481	1,203	1,[illegible]07	1,710	1,[illegible]20	855	680	385	606	515	1,112	960	1,1[illegible]6	745	871	558	819	683	1,091	1,068
	Orissa Division.																				
39	Cuttack	3,084	2,01[illegible]	1,9[illegible]	1,831	941	80[illegible]	481	404	720	722	1,719	1,429	1,795	1,260	1,609	1,002	1,452	1,335	2,063	2,488
40	Pooree	2,[illegible]	2,[illegible]16	1,003	911	[illegible]1	[illegible]	26[illegible]	161	811	377	845	956	903	701	903	523	891	628	1,340	1,481
41	Balasore	2,521	2,300	1,327	1,24[illegible]	584	438	387	32[illegible]	437	412	1,069	970	1,287	921	1,119	688	910	795	1,347	1,596
	Chota Nagpore Division																				
42	Hazaribagh	1,908	1,6[illegible]8	1,91[illegible]	1,794	698	590	452	331	319	294	80[illegible]	874	1,113	825	929	719	928	912	898	1,054
43	Lohardugga	2,9[illegible]5	2,312	2,804	2,1[illegible]3	1,114	732	7[illegible]0	[illegible]05	617	679	1,318	1,205	1,152	1,129	1,275	950	1,149	1,098	1,300	1,411
44	Singhbhum	619	48[illegible]	5[illegible]5	510	311	2[illegible]4	2[illegible]0	11[illegible]	281	220	511	352	497	351	603	374	416	339	309	450
45	Manbhum	1,002	840	999	913	684	532	515	361	522	453	8[illegible]8	639	813	506	655	437	686	561	580	604
	TOTAL FOR THE PROVINCE	84,059	69,276	84,372	77,019	50,090	45,377	37,958	25,[illegible]80	34,800	32,278	78,911	71,925	81,687	61,797	73,903	52,146	60,159	51,154	90,477	82,349
	*RATIO PER 1,000 LIVING	110·26	88·37	21·37	18·38	11·[illegible]	9·15	10·11	8·60	14·01	12·68	15·18	12·17	16·79	13·17	22·89	16·44	31·95	25·21	50·67	38·48

* These ratios have been calculated on the total population of the Province less 36,434. This is owing to the facts, first, that the ages of 35,408 persons are not specified in the Census tables of 1881, and, secondly, that at a census of the European population taken in 1884, owing to the then existing population having been under-estimated at the previous enumeration, their ages were not recorded in conformity with the 10 groups adopted in the Census tables of 1881, but in two groups of "not exceeding 12 years" and "12 years and upwards."

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 18th April 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. V.—*Deaths registered according to* **CLASS** *in the Districts of the Bengal Province during the year* 1883.

1	2	3						4						5					
		Population according to Census of 1881.						Number of deaths registered.						Ratio of deaths per 1,000 of population.					
Number.	Districts.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.*	Total.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.	Total.
	Burdwan Division.																		
1	Burdwan	910	1,120,676	263,816	...	6,421	1,391,823	11	31,795	7,188	...	98	39,092	12·08	28·37	27·24	...	15·26	28·08
2	Bankura	56	910,845	46,274	...	84,577	1,041,752	...	19,410	902	...	609	21,121	...	21·52	19·49	...	7·20	20·27
3	Birbhum	48	617,310	162,621	...	14,419	794,428	3	16,617	3,816	...	198	20,634	62·50	26·91	23·46	...	13·70	25·97
4	Midnapore	740	2,235,535	164,003	36	117,488	2,517,802	8	46,981	3,012	...	1,845	51,846	10·81	21·01	18·36	...	15·70	20·59
5	Hughli	290	530,798	129,700	2	23	660,813	4	11,132	3,069	...	......	14,205	13·79	20·97	23·66	...	...	21·49
6	Serampore	365	292,174	59,098	288	30	351,955	5	5,010	925	...	......	5,940	13·69	16·76	15·65	...	...	16·87
	Total of Hughli, including Serampore ...	655	822,972	188,798	290	53	1,012,768	9	16,142	3,994	..	......	20,145	13·81	19·61	21·15	...	...	19·89
7	Howrah	2,051	500,870	132,118	37	305	635,381	12	9,774	2,359	...	......	12,145	5·82	19·51	17·85	...	...	19·11
	Presidency Division.																		
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	9,928	1,003,110	604,723	230	429	1,618,420	125	20,084	12,194	...	......	32,403	12·59	20·02	20·16	...	...	20·03
	Suburbs of Calcutta ...	4,048	149,930	96,583	127	751	251,439	227	6,862	3,740	1	2	10,832	56·07	45·76	38·72	7·87	2·66	43·08
	Total of 24-Pergunnahs	13,976	1,153,040	701,306	357	1,180	1,869,859	352	26,946	15,934	1	2	43,235	25·18	23·36	22·72	2·80	1·69	23·12
9	Nuddea	6,412	727,890	921,395	1	13	1,655,721	127	25,832	33,767	...	......	59,726	19·71	35·48	36·64	...	...	36·07
10	Jessore	492	768,322	1,170,505	...	56	1,939,375	8	20,523	31,917	...	......	52,148	16·26	26·71	27·26	...	...	27·04
11	Murshidabad	470	644,796	589,957	1	1,566	1,226,790	7	15,469	14,791	...	......	30,267	14·89	24·30	25·07	...	...	24·67
12	Khulna	747	523,657	555,544	...	......	1,079,948	3	10,584	12,480	...	......	23,067	4·01	20·21	22·46	...	...	21·35
	Rajshahye Division.																		
13	Dinagepore	457	716,630	795,824	...	1,435	1,514,846	1	12,916	15,863	...	20	28,800	2·18	18·02	19·93	...	63·93	19·01
14	Rajshahye	121	288,749	1,049,700	55	13	1,338,638	...	7,860	36,126	4	......	43,990	...	27·22	34·41	72·72	...	32·86
15	Rungpore	86	816,532	1,279,605	60	1,681	2,097,964	...	14,105	23,957	...	16	38,058	...	17·27	18·70	...	9·51	18·14
16	Bogra	27	140,860	59,411	2	58	734,358	...	3,143	12,714	...	......	15,887	...	22·81	21·47	...	...	21·63
17	Pubna	114	361,479	949,908	1	226	1,311,728	...	8,998	23,150	...	......	32,148	..	24·89	24·37	...	...	24·50
18	Darjiling	1,800	126,717	8,204	18,775	641	156,137	26	1,388	128	168	25	1,735	14·44	10·95	15·60	8·94	45·24	11·11
19	Julpaiguri... ...	159	367,891	208,513	486	4,513	581,562	1	7,060	3,593	1	163	10,818	6·28	19·18	17·23	2·05	36·11	18·60
	Dacca Division.																		
20	Dacca	8,709	856,680	1,250,687	49	135	2,116,350	178	18,719	22,551	...	......	41,448	20·22	21·85	18·03	...	...	19·58
21	Furidpore	2,741	653,992	974,983	13	5	1,631,734	15	8,939	11,873	...	......	20,827	5·47	13·68	12·17	...	...	12·76
22	Backergunge	3,717	624,597	1,267,694	4,707	84	1,900,889	70	13,528	31,572	81	......	45,251	18·83	21·65	24·89	16·88	...	23·80
23	Mymensing	151	987,355	2,038,505	...	25,955	3,051,966	...	13,315	22,091	...	442	35,848	...	13·48	10·83	..	17·02	11·74
	Chittagong Division.																		
24	Chittagong	1,055	275,177	801,986	54,110	13	1,132,341	29	3,962	11,462	689	......	16,142	27·48	14·39	14·29	12·73	...	14·25
25	Noakhalli	588	211,476	608,592	114	2	820,772	8	3,211	11,093	..	......	14,312	13·60	15·18	18·22	...	...	17·43
26	Tipperah	199	511,025	1,007,740	374	......	1,519,338	3	8,050	13,504	...	......	21,557	15·07	15·75	13·40	...	...	14·18
	Patna Division.																		
27	Patna	2,588	1,541,061	213,141	...	66	1,756,856	5	34,098	4,530	...	......	38,633	1·93	22·12	21·25	...	...	21·98
28	Gya	96	1,891,484	233,098	...	4	2,124,682	...	39,857	5,071	...	......	44,928	..	21·07	21·79	...	...	21·14
29	Shahabad	276	1,817,881	146,732	...	20	1,964,909	2	34,377	2,551	...	......	36,930	7·24	18·91	17·38	...	...	18·79
30	Mozufferpore ...	372	2,265,380	316,308	...	......	2,582,060	2	29,854	3,667	...	......	33,523	5·37	13·17	11·59	...	...	12·98
31	Durbhunga	325	2,323,979	338,985	...	158	2,033,447	9	31,959	3,607	...	......	35,575	27·69	13·75	11·67	...	...	13·50
32	Sarun	282	2,010,958	269,142	...	......	2,280,382	...	31,075	3,897	..	......	34,972	...	15·45	14·47	...	...	15·33
33	Chumparun	1,936	1,476,985	242,687	...	......	1,721,608	49	22,505	3,084	...	......	25,638	25·30	15·23	12·70	...	...	14·88
	Bhagulpore Division.																		
34	Monghyr	1,091	1,774,013	187,517	...	7,153	1,969,774	22	17,446	2,076	...	32	19,576	20·16	9·83	11·07	...	4·47	9·93
35	Bhagulpore	578	1,764,304	185,533	...	15,743	1,966,158	10	32,183	2,601	...	86	34,880	17·30	18·24	14·01	...	5·46	17·74
36	Purneah	327	1,076,539	771,130	...	691	1,848,687	5	19,871	12,641	...	......	32,517	15·29	18·45	16·39	...	...	17·58
37	Maldah	26	379,153	329,525	...	1,744	710,448	...	7,252	5,560	...	29	12,841	..	19·12	16·87	...	16·62	18·07
38	Sonthal Pergunnahs* ...	3,057	847,590	108,899	132	608,415	1,568,093	5	12,027	1,723	...	5,893	19,648	1·63	14·18	15·82	...	9·08	12·52
	Orissa Division.																		
39	Cuttack	2,342	1,744,227	47,529	3	964	1,795,065	15	29,217	412	...	......	29,644	6·40	16·75	8·66	...	...	16·51
40	Poori	819	873,664	14,003	...	1	888,487	6	17,839	174	...	......	18,019	7·32	20·41	12·42	...	...	20·28
41	Balasore	815	915,792	23,804	4	4,865	945,280	7	20,178	375	...	78	20,638	8·58	22·03	15·75	...	16·03	21·83
	Chota Nagpore Division.																		
42	Hazaribagh	552	924,811	106,097	...	73,282	1,104,742	...	15,644	1,694	...	1,555	18,893	..	16·91	15·96	...	21·21	17·10
43	Lohardugga	36,281	868,843	77,403	1	626,717	1,609,244	245	11,956	1,431	...	13,069	26,701	6·75	13·76	18·49	...	20·85	16·59
44	Singhbhum	2,988	555,046	3,282	...	648	561,964	20	7,866	54	...	21	7,961	6·69	14·17	16·45	...	32·40	14·16
45	Manbhum	562	946,247	45,453	23	65,958	1,058,228	4	11,896	531	...	1,181	13,612	7·24	12·57	11·08		17·90	12·86
	Total for the Province	101,884	42,953,029	21,361,957	79,721	1,667,293	66,163,884	1,277	792,567	425,526	944	25,362	1,245,676	12·52	18·45	19·91	11·84	15·21	18·82

* Aboriginal tribes and clans chiefly; and some semi-aboriginal tribes, semi-Hinduized aboriginals, and Hindus (mixed or impure) not recognizing caste.

Office of the Sany. Commr. for Bengal,
The 18*th April* 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	DISTRICTS.					
	Burdwan Division.					
1	Burdwan	1,335,905	1,549	105	31,261	493
2	Bankura	989,106	379	8	16,286	388
3	Birbhum	786,680	291	8	17,502	101
4	Midnapore	2,448,438	3,598	144	87,834	3,949
5	Hughli	591,418	574	5	9,876	1,098
6	Serampore	305,231	339	6	3,183	467
	Total of Hughli including Serampore	896,649	913	11	13,059	1,565
7	Howrah	529,753	1,256	2	4,420	2,025
	Presidency Division.					
8	24-Pergunnahs	1,424,329	3,642	40	20,660	832
9	Nuddea	1,560,321	7,401	76	43,548	863
10	Jessore	1,930,880	4,276	3	44,667	167
11	Murshidabad	1,143,106	939	329	25,009	130
12	Khulna	1,071,210	1,687	11	17,390	300
	Rajshahye Division.					
13	Dinagepore	1,501,786	641	3	25,709	275
14	Rajshahye	1,318,847	2,038	10	40,085	123
15	Rungpore	2,084,644	2,115	1	32,643	468
16	Bogra	728,179	244	......	14,061	48
17	Pubna	1,275,424	225	6	28,806	255
18	Darjiling	148,161	328	41	849	220
19	Julpaiguri	573,615	2,334	12	7,691	79
	Dacca Division.					
20	Dacca	2,012,339	2,114	92	27,278	2,263
21	Faridpore	1,621,471	2,058	58	16,182	506
22	Backergunge	1,887,703	4,528	481	27,675	606
23	Mymensing	3,004,853	3,778	642	24,301	834
	Chittagong Division.					
24	Chittagong	1,110,211	308	5	11,165	462
25	Noakhalli	815,648	89	287	11,308	241
26	Tipperah	1,488,289	2,323	557	14,192	476
	Patna Division.					
27	Patna	1,457,017	1,432	243	19,250	2,506
28	Gya	2,038,691	7,034	363	28,828	641
29	Shahabad	1,885,941	6,152	44	24,124	750
30	Mozufferpore	2,490,715	8,126	183	20,495	1,739
31	Durbhanga	2,567,351	2,609	195	25,038	2,349
32	Sarun	2,201,333	999	547	12,857	3,374
33	Chumparun	1,700,345	520	655	18,337	400
	Bhagulpore Division.					
34	Monghyr	1,886,174	594	257	15,257	196
35	Bhagulpore	1,908,705	341	174	27,257	1,459
36	Purneah	1,833,671	338	25	29,922	452
37	Maldah	698,018	1,035	15	11,084	33
38	Sonthal Pergunnahs	1,560,088	363	58	17,070	192
	Orissa Division.					
39	Cuttack	1,724,896	3,380	1,527	12,463	2,972
40	Poori	864,195	953	841	4,235	2,119
41	Balasore	925,015	1,953	578	7,273	4,878
	Chota Nagpore Division.					
42	Hazaribagh	1,089,436	674	158	14,950	938
43	Lohardugga	1,590,801	536	18	20,047	2,256
44	Singbhum	555,958	34	181	5,492	778
45	Manbhum	1,048,924	310	48	10,184	715
	TOTAL OF DISTRICTS.	63,694,721	81,446	9,042	879,741	46,510
	TOWNS.					
	Burdwan District.					
1	Burdwan	34,080	121	......	949	158
2	Culna	10,901	23	1	161	27
3	Raniguuge	10,937	74	2	181	57
	Bankura District.					
4	Bankura	18,747	9	......	376	42
5	Bishenpore	21,238	4	......	593	38
6	Sonamukhi	12,616	73	5	263	17
	Birbhum District.					
7	Soori	7,848	6	......	196	11
	Midnapore District.					
8	Midnapore	33,560	49	1	477	229
9	Ghattal	12,638	18	1	77	21
10	Chandrakona	12,257	36	......	132	26
11	Ramjibanpore	10,909	65	......	50	11
	Hughli District.					
12	Hughli	33,718	146	1	523	231
13	Jehanabad	10,507	5	......	177	6
14	Khanacool	7,708	8	......	73	24
15	Shambazar	12,462	7	......	209	6

Districts and Principal Towns of the Bengal Province during the year 1883.

8					9	10	1								
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.													FROM ALL CAUSES.		
Male.	Female.*	Wounding or Accident.	Snake-bite, or killed by Wild Beasts.	Total.	All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
18	27	96	134	275	3,309	36,992	1·15	·07	23·40	·36	·20	2·47	27·69	27·98	1
10	12	66	114	202	2,114	19,377	·38	·008	16·46	·39	·20	2·13	19·49	16·04	2
12	12	92	93	209	2,292	20,403	·36	·01	22·25	·12	·26	2·91	25·93	24·80	3
14	7	150	524	695	4,223	50,443	1·46	·05	15·45	1·61	·28	1·72	20·69	17 48	4
8	16	87	69	180	779	12,512	·97	·008	16·69	1·85	·30	1·31	21·15	17·60	5
10	8	28	56	102	557	4,654	1·11	·01	10·42	1·53	·33	1·82	15·24	16·35	6
18	24	115	125	282	1,336	17,166	1·01	·01	14·56	1·74	·31	1·48	19·14	17·17	
9	31	117	119	276	1,734	9,713	2·37	·003	8·34	3·82	·52	3·27	18·33	16 56	7
46	63	352	378	839	2,035	28,048	2·55	·02	14·50	·58	·58	1·42	19·69	20·95	8
73	78	172	520	843	4,045	56,776	4·74	·04	27·90	·55	·54	2·59	36·38	37·46	9
68	111	250	288	717	2,347	52,177	2·21	·001	23·13	·08	·37	1·21	27·02	22·39	10
30	35	124	277	466	1,113	27,086	·82	·28	21·87	·11	·40	·97	24·48	25·66	11
24	37	171	230	462	1,646	22,896	1·57	·01	17·54	·28	·43	1·53	21·37	23·84	12
6	11	122	281	420	1,392	28,520	·42	·001	17·17	·18	·27	·92	18·99	20·47	13
33	57	182	316	588	746	43,590	1·54	·007	30·39	·09	·44	·56	33·05	24·05	14
2	5	193	243	416	1,991	37,664	1·01	·0004	15·65	·22	·21	·95	18·06	14·21	15
9	22	125	185	341	1,020	15,714	·33	...	19·30	·06	·46	1·40	21·57	17 77	16
18	40	145	232	435	1,661	31,388	·17	·004	22·58	·19	·34	1·30	24 60	12·70	17
6	2	28	9	45	78	1,561	2·21	·27	5·73	1·18	·30	·52	10 53	5·06	18
...	5	58	35	98	310	10,533	4·06	·02	13·40	·13	·17	·55	18·38	13·45	19
43	91	158	194	486	6,090	38,932	1·04	·04	13·55	1·12	·24	3·32	19·31	15·84	20
21	58	118	175	372	1,288	20,464	1·26	·03	9·97	·31	·22	·79	12·62	11·11	21
28	48	777	178	1,031	10,699	45,010	2·39	·25	14·60	·36	·54	5·66	23·84	15·03	22
19	21	176	174	390	4,698	34,043	1·25	·21	8·09	·27	·12	1·56	11 52	6·18	23
6	11	509	63	589	3,159	15,688	·27	·004	10·05	·41	·53	2·84	14·13	16·81	24
7	5	342	66	420	1,918	14,263	·10	·35	13·86	·29	·51	2·35	17·48	15·78	25
13	11	343	52	419	2,890	20,857	1·56	·37	9·53	·31	·28	1·94	14·01	10·13	26
12	73	413	235	733	6,533	30,706	·99	·16	13·40	1·74	·51	4·54	21·36	25·40	27
17	76	539	357	989	3,070	40,923	3 45	·17	14·13	·31	·48	1·50	20·07	15·57	28
36	61	375	171	643	3,641	85,363	3·26	·02	12·79	·49	·34	1·93	18·75	13·04	29
8	18	641	726	1,393	4,663	31,599	1·25	·07	8·22	·69	·55	1·87	12·68	13·75	30
4	5	413	613	1,035	1,970	33,796	1·01	·07	9·98	·91	·40	·76	13·15	11·87	31
49	72	542	281	944	14,579	33,300	·45	·24	5·84	1·51	·42	6·62	15·93	12·20	32
13	35	353	343	743	4,593	25,257	·31	·38	10 78	·23	·40	2·70	14·55	11·04	33
9	15	264	352	640	610	17,554	·31	·13	8·09	·10	·33	·32	9·30	13·88	34
4	2	299	286	591	3,095	32,917	·17	·09	14·28	·76	·30	1·62	17·24	14·94	35
11	11	155	183	360	910	32,007	·18	·01	16·31	·24	·19	·49	17·45	18·96	36
12	4	31	157	204	328	12,699	1·48	·02	15·87	·04	·29	·18	18·19	19·63	37
7	6	58	141	212	1,571	19,466	·23	·03	10·94	·12	·13	1·00	12·47	10·13	38
40	105	451	289	885	7,260	28,403	1·05	·88	7·22	1·72	·51	4·21	16·51	19·84	39
22	25	202	93	342	8,553	17,043	1·10	·97	4·90	2·45	·39	9·89	19·72	20·05	40
31	65	175	141	412	5,057	20,151	2·11	·02	7·86	5·27	·44	5·46	21·78	21·59	41
13	32	239	110	394	1,410	18,519	·61	·14	13·72	·85	·36	1·29	16·98	12·53	42
8	5	182	203	398	3,178	26,433	·33	·01	12·60	1·41	·25	1·99	16·61	17·95	43
29	84	29	134	226	1,104	7,815	·06	·32	9·87	1·39	·40	1·98	14·05	13·53	44
5	10	93	76	184	2,007	13,448	·29	·04	9·70	·68	·17	1·91	12·82	10·96	45
862	1,478	10,438	9,896	22,674	138,880	1,178,293	1·27	·14	13 81	·73	·35	2·18	18·49	16·20	
5	1	6	3	15	306	1,549	8·55	...	27·84	4·63	·44	8·97	45·45	29·14	1
1	...	5	2	8	44	264	2·10	·09	14·78	2·47	·73	4·03	24·21	33·02	2
1	...	6	......	7	16	287	6·76	·18	11·07	5·21	·63	1·16	26·24	36·37	3
...	...	3	1	4	182	513	·48	...	14·72	2·24	·21	9·70	27·36	25·93	4
1	...	......	1	2	176	808	·18	...	27·86	1·55	·09	8·26	37·96	36·49	5
...	...	......	1	1	65	423	5·70	·39	20·84	1·34	·07	5·15	33·52	30·42	6
...	...	......	......	......	18	231	·76	...	24·97	1·40	......	2·29	29·43	30·24	7
2	...	4	......	6	103	925	1·46	·02	14·21	6·82	·17	4·85	27·56	31·12	8
...	...	......	2	2	15	134	1·42	·07	6·09	1·66	·15	1·18	10·60	27·71	9
...	...	4	......	4	11	209	2·93	...	10·76	2·12	·32	·89	17·05	36·30	10
...	...	......	......	......	9	135	5·95	...	4·58	1·00	......	·82	12 37	29·00	11
3	1	7	2	10	225	1,136	3·77	·02	13·50	5·96	·25	5·81	29·34	22·35	12
...	1	3	1	5	17	210	·47	...	10·84	·57	·47	1·61	19·98	17·05	13
...	1	1	......	2	4	191	1·03	...	9·47	4·41	·25	·51	15·69	15·77	14
...	...	......	2	2	2	226	·56	...	16·77	·43	·16	·16	18·13	38·11	15

ANNUAL FORM No. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

	2		4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel complaints.
	TOWNS—*continued.*					
	Hughli District—continued.					
16	Serampore	26,496	130	......	341	144
17	Boidobatti	14,718	96	1	104	42
18	Utterpara	5,510	47	......	40	32
	Howrah District.					
19	Howrah	105,628	653	6	933	425
	24-Pergunnahs District.					
20	Suburbs of Calcutta	251,430	2,177	92	4,012	1,697
21	South Suburban	51,658	111	13	528	141
22	Baranagore	29,982	139	......	331	131
23	Rajpore	10,576	32	......	111	9
24	Angurpara	22,739	72	......	399	50
25	Nowabgunge	18,018	100	......	231	32
26	Naihatti	21,533	152	......	374	41
27	Bussirhat	20,450	42	......	526	12
28	Baduria	19,135	32	......	297	13
	Nuddea District.					
29	Kishnaghur	27,477	97	......	834	51
30	Ranaghat	8,683	14	......	173	4
31	Santipore	29,687	191	......	650	4
32	Kushtia	9,717	3	......	123	9
33	Meherpore	5,731	8	......	178	......
34	Noboddip	14,105	57	......	199	10
	Jessore District.					
35	Jessore	8,495	17	......	215	12
	Murshidabad District.					
36	Berhampore	23,605	53	......	303	19
37	Kandi	10,661	12	1	176	6
38	City Murshidabad	39,231	173	2	1,119	35
39	Jungipore	10,187	4	3	127	32
	Khulna District.					
40	Satkhira	8,738	8	......	151	4
	Dinagepore District.					
41	Dinagepore	12,560	......	......	215	12
	Rajshahye District.					
42	Beauleah	19,701	41	1	246	29
	Rungpore District.					
43	Rungpore	13,320	19	......	254	33
	Bogra District.					
44	Bogra	6,179	1	......	123	20
	Pubna District.					
45	Pubna	15,267	13	......	351	12
46	Serajgunge	21,037	1	......	277	24
	Darjiling District.					
47	Darjiling	7,976	4	21	70	19
	Julpaiguri District.					
48	Julpaiguri	7,947	96	1	105	35
	Dacca District.					
49	Dacca	80,161	48	......	664	220
50	Naraingunge	12,561	28	......	86	44
51	Manickgunge	11,289	7	......	330	3
	Faridpore District.					
52	Faridpore	10,263	21	......	300	15
	Backergunge District.					
53	Barisal	13,186	38	1	135	23
	Mymensing District.					
54	Jamalpore	16,001	20	1	323	11
55	Kishoregunge	12,898	37	......	248	23
56	Tanghail	18,124	13	......	266	8
	Chittagong District.					
57	Chittagong	22,130	22	8	279	31
	Noakhalli District.					
58	Sudharam	5,124	1	......	33	3
	Tipperah District.					
59	Comillah	13,506	9	......	181	16
60	Brahmanberiah	17,543	60	7	225	9

Districts and Principal Towns of the Bengal Province during the year 1883—continued.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
Suicide.													From All Causes.		
Male.	Female.	Wounding or Accident.	Snake-bite, or killed by Wild Beasts.	Total.	All other Causes.	Total Deaths from All Causes.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
1	4	14	3	22	175	812	4·00	...	12·83	5·43	·82	6·00	30·64	41·79	16
..	1	5	1	5	55	303	6·52	·06	7·06	2·85	·33	3·73	20·58	24·54	17
1	...	2	1	4	48	171	8·54	...	7·25	5·80	·72	8·71	31·03	68·33	18
5	4	29	3	41	374	2,432	6·18	·05	8·83	4·02	·38	3·54	23·02	21·14	19
9	10	79	4	102	2,722	10,832	8·05	·36	16·07	6·74	·40	10·82	43·08	52·50	20
2	2	11	8	23	97	913	2·14	·25	10·22	2·72	·44	1·87	17·67	17·09	21
1	2	3	1	7	95	703	4·63	...	11·03	4·36	·23	3·16	23·44	17·50	22
...	1	2	....	3	28	183	3·02	...	10·49	·85	·28	2·64	17·30	21·29	23
2	1	1	1	5	26	552	3·16	...	17·54	2·19	·21	1·14	24·27	26·56	24
..	...	4	2	6	23	391	5·55	...	12·82	1·77	·33	1·22	21·70	23·79	25
1	1	4	2	8	27	602	7·05	...	17·36	1·90	·37	1·25	27·95	27·83	26
...	2	3	......	5	52	637	2·05	...	25·72	·58	·24	2·54	31·14	26·18	27
...	1	1	1	3	29	374	1·67	...	15·52	·67	·15	1·51	19·54	15·98	28
1	3	4	3	11	205	1,198	3·53	...	30·35	1·85	·40	7·46	43·60	40·31	29
...	..	3	1	4	18	213	1·61	...	19·02	·46	·16	2·07	24·52	56·68	30
2	5	3	2	12	35	892	6·43	...	21·89	·13	·40	1·17	30·04	31·55	31
1	...	2	1	4	6	145	·30	...	12·65	·92	·41	·61	14·92	13·61	32
1	...	..	1	2	13	207	1·39	...	31·05	.	·34	3·31	36·11	50·83	33
...	...	1	....	1	28	295	4·04	...	14·10	·70	·07	1·98	20·91	... ..	34
1	...	9	2	12	15	271	2·00	...	25·30	1·41	1·41	1·76	31·90	58·26	35
.	1	5	3	9	54	438	2·24	...	12·83	·80	·38	2·28	18·55	23·63	36
...	2	8	......	11	9	215	1·12	·09	16·50	·56	1·03	·84	20·16	31·40	37
...	.	3	6	9	62	1,400	4·40	·05	28·52	·89	·92	1·58	35·08	35·13	38
...	.	1	1	2	60	228	·39	·29	12·46	3·14	·19	5·88	22·38	33·27	39
...	...	2	1	3	5	171	·91	...	17·28	·45	·34	·57	19·56	30·89	40
...	...	2	......	2	51	280	...	...	17·11	·95	·15	4·16	22·29	18·08	41
...	...	4	1	5	78	400	2·07	·05	12·42	4·47	·25	3·94	20·21	36·21	42
...	1	6	4	11	77	394	1·42	...	19·06	2·47	·82	5·78	29·57	24·00	43
...	...	2	1	3	26	173	·16	...	19·90	3·23	·48	4·20	27·99	62·89	44
...	1	1	1	3	33	412	·85	...	22·09	·78	·19	2·16	26·98	15·70	45
1	...	2	1	4	42	348	·04	...	13·16	1·14	·19	1·99	16·54	13·53	46
1	...	5	......	6	54	174	·50	2·63	8·77	2·38	·75	6·77	21·81	31·70	47
1	...	2	......	3	45	285	12·07	·12	13·21	4·40	·37	5·66	35·86	49·60	48
1	...	5	1	7	977	1,016	·59	...	8·28	2·74	·08	12·18	23·90	22·22	49
...	2	2	1	5	74	237	2·23	...	6·84	3·50	·30	5·88	18·85	20·46	50
1	...	3	......	4	19	363	·62	...	20·23	·26	·35	1·68	32·15	16·13	51
2	1	2	......	5	22	363	2·04	...	20·23	1·46	·48	2·14	35·36	49·32	52
...	...	5	......	5	30	341	2·88	·07	10·23	1·74	·37	2·95	18·27	16·86	53
...	...	2	......	2	67	424	1·24	·06	20·07	·08	·12	4·16	26·35	28·72	54
...	...	......	......	......	96	404	2·86	...	19·22	1·78	......	7·45	31·32	22·23	55
...	...	......	4	4	86	377	·71	...	14·67	·44	·22	4·74	20·80	32·97	56
...	...	13	1	14	105	454	·99	·13	12·60	1·40	·63	4·74	20·51	8·11	57
1	...	1	......	2	10	49	·19	...	6·44	·58	·39	1·05	9·56	83·87	58
...	...	3	......	3	54	263	·66	...	13·40	1·18	·22	3·99	10·47	17·98	59
1	...	1	......	2	95	437	5·64	·39	12·82	·51	·11	5·41	24·01	12·60	60

ANNUAL FORM No. VI.—*Deaths registered from* **DIFFERENT CAUSES** *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	TOWNS—*concluded.*					
	Patna District.					
61	Patna ...	160,237	538	74	2,082	1,140
62	Behar ...	48,971	119	4	607	27
63	Dinapore ...	52,225	52	1	311	67
64	Barrh ...	23,610	30	3	161	49
65	Mokamah ...	13,722	16	1	228	60
66	Futwa ...	21,074	26	2	142	19
	Gya District.					
67	Gya ...	76,121	674	171	1,497	368
68	Daudnagur ...	9,870	229	......	142	11
	Shahabad District.					
69	Arrah ...	43,465	58	2	433	55
70	Dumraon ...	17,835	60	......	176	24
71	Buxar ...	17,668	109	......	157	36
	Mozufferpore District.					
72	Mozufferpore ...	42,742	164	3	474	142
73	Sitamurhi ...	6,125	4	3	94	29
74	Hajeepore ...	25,695	99	3	241	23
75	Lalgunge ...	16,783	34	2	231	16
	Durbhanga District.					
76	Durbhanga ...	66,096	170	42	858	440
	Sarun District.					
77	Chuprah ...	53,249	99	10	404	306
78	Sewan ...	13,307	3	25	69	35
79	Revilgunge ...	12,493	13	......	129	101
	Chumparun District.					
80	Bettiah ...	21,263	......	2	222	26
	Monghyr District.					
81	Monghyr ...	57,520	198	2	648	272
82	Jamalpore ...	13,563	80	2	202	47
83	Shaikpura ...	12,517	3	5	245	3
	Bhagulpore District.					
84	Bhagulpore ...	57,453	167	23	838	331
	Purneah District.					
85	Purneah ...	15,016	13	1	418	43
	Maldah District.					
86	English Bazar ...	12,430	13	3	92	13
	Sonthal Pergunnahs District.					
87	Deoghur ...	8,005	6	22	109	15
	Cuttack District.					
88	Cuttack ...	43,239	61	2	181	174
89	Kendrapara ...	15,697	22	14	127	31
90	Jajipur ...	11,233	39	27	35	4
	Poori District.					
91	Poori ...	24,202	169	......	208	176
	Balasore District.					
92	Balasore ...	20,265	54	12	150	121
	Hazaribagh District.					
93	Hazaribagh ...	15,306	49	16	222	47
	Lohardugga District.					
94	Ranchi ...	18,443	......	......	206	23
	Singbhum District.					
95	Chyebassa ...	6,006	......	31	103	5
	Manbhum District.					
96	Purulia ...	9,304	2	......	85	27
	TOTAL FOR TOWNS ...	2,469,163	8,993	672	84,025	8,760
	TOTAL FOR THE PROVINCE ...	66,163,884	90,439	9,714	913,766	55,270

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 18*th April* 1884.

Districts and Principal Towns of the Bengal Province during the year 1883—concluded.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.													FROM ALL CAUSES.		
Male.	Female.	Wounding or Accident.	Snake-bite or killed by Wild Beasts.	Total.	All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
2	2	79	10	93	1,327	5,254	3·35	·46	12·99	7·11	·58	8·28	32·78	31·69	61
1	...	20	7	28	389	1,204	3·04	·08	12·30	·55	·57	7·94	24·58	29·14	62
1	1	7	1	10	74	515	·00	·01	5·95	1·28	·19	1·41	9·86	12·36	63
...	...	6	1	7	65	324	1·65	·12	6·81	2·07	·29	2·75	13·72	11·63	64
1	3	3	1	8	95	408	1·16	·07	16·61	4·37	·58	6·92	29·73	31·00	65
...	...	3	......	3	30	222	1·23	·09	6·73	·90	·14	1·42	10·53	18·85	66
2	...	46	3	51	815	3,576	8·85	2·24	19·66	4·83	·67	10·70	46·97	39·17	67
...	...	1	1	2	45	429	23·20	...	14·38	1·11	·20	4·55	43·46	31·79	68
...	...	21	2	23	806	877	1·33	·04	9·96	1·26	·52	7·04	20·17	23·38	69
...	3	11	1	15	36	311	3·36	...	9·86	1·34	·84	2·01	17·43	22·59	70
2	1	11	2	16	61	379	6·16	...	8·88	2·03	·90	3·45	21·45	21·40	71
1	...	26	8	35	165	983	3·83	·07	11·08	3·32	·81	8·86	22·99	19·36	72
...	...	3	2	5	60	185	·65	·48	15·34	4·73	·81	8·16	30·20	39·39	73
...	...	17	3	20	38	424	3·85	·11	9·37	·89	·77	1·47	16·50	13·73	74
...	...	6	1	7	42	332	2·02	·11	13·76	·95	·41	2·50	19·78	16·49	75
...	...	10	7	17	252	1,770	2·57	·63	12·98	6·65	·25	3·81	26·91	16·51	76
1	2	8	8	19	279	1,117	1·85	·18	7·58	5·74	·35	5·23	20·97	18·43	77
...	...	4	3	7	104	243	·22	1·87	5·18	2·63	·52	7·81	18·26	9·16	78
1	...	5	3	9	60	312	1·04	...	10·32	8·08	·72	4·80	24·97	28·47	79
...	...	5	4	9	122	381	...	·09	10·44	1·22	·42	5·73	17·91	29·38	80
1	...	23	2	26	167	1,318	3·44	·03	11·26	4·73	·45	2·90	22·82	23·18	81
...	...	4	8	12	93	436	5·89	·14	14·80	3·46	·88	6·85	32·14	32·08	82
...	1	1	5	7	10	273	·23	·39	19·57	·23	·55	·79	21·81	32·22	83
1	1	14	2	18	591	1,963	2·90	·40	14·49	5·76	·31	10·28	34·16	27·90	84
...	...	6	1	7	28	510	·86	·06	27·83	2·86	·46	1·86	33·96	37·01	85
...	...	1	4	5	16	142	1·04	·24	7·40	1·04	·40	1·28	11·42	20·34	86
...	1	......	......	1	29	182	·74	2·74	13·61	1·87	·12	3·62	22·73	19·77	87
1	...	8	1	10	151	579	1·41	·04	4·18	4·02	·23	3·49	13·39	19·08	88
2	1	3	2	8	161	363	1·40	·89	8·09	1·97	·50	10·25	23·12	29·07	89
...	...	1	1	2	102	209	3·47	2·40	3·11	·35	·17	9·08	15·00	30·25	90
1	...	5	1	7	416	976	6·05	...	8·56	7·24	·28	17·12	40·17	64·13	91
...	...	5	1	6	144	487	2·06	·59	7·40	5·97	·29	7·10	24·03	28·06	92
1	...	4	......	5	35	374	3·20	1·04	14·50	3·07	·32	2·28	24·43	20·86	93
...	1	15	......	16	23	268	...	...	11·10	1·24	·86	1·24	14·53	21·38	94
...	...	3	......	3	4	146	...	5·16	17·14	·83	·49	·66	24·30	54·17	95
...	...	6	1	7	43	164	·21	...	9·13	2·90	·75	4·62	17·62	45·48	96
66	66	689	175	906	13,937	67,383	3·04	·27	13·77	3·54	·40	5·64	27·28	30·88	
928	1,544	11,127	10,071	23,670	152,817	1,245,676	1·36	·14	13·81	·83	·35	2·30	18·82	16·75	

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM NO. VII.—*Deaths registered from* **CHOLERA** *in the*

1	2	3		4							
		CIRCLES OF REGISTRATION.		VILLAGES.							
Number.	DISTRICTS.	Number in each district.	Number from which deaths from Cholera were reported.	Number in each district.	Number from which deaths from Cholera were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan	20	20	3,667	220	208	170	451	464	188	78
2	Bankura	13	12	5,460	86	157	73	65	65	44	22
3	Birbhum	8	8	3,273	56	......	6	7	37	92	17
4	Midnapore	29	28	13,876	960	534	353	393	396	232	185
5	Hughli	12	12	1,522	117	193	47	144	96	60	11
6	Serampore	8	8	769	106	129	47	50	130	47	16
	Total of Hughli, including Serampore ...	20	20	2,291	223	322	94	194	226	107	27
7	Howrah	7	7	1,487	350	418	247	176	236	157	62
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	5,078	......	1,145	627	465	521	191	47
	Suburbs of Calcutta	1	1	1	.....	300	229	366	303	246	139
	Total of 24-Pergunnahs	32	32	5,079	819	1,745	856	831	824	437	186
9	Nuddea	31	31	2,964	1,035	1,268	620	1,018	2,102	1,328	147
10	Jessore	22	22	4,732	727	686	248	708	1,199	658	50
11	Murshidabad	27	26	3,585	229	122	73	37	319	427	47
12	Khulna	14	14	2,890	497	280	90	245	350	129	18
	Rajshahye Division.										
13	Dinagepore	18	16	6,021	106	35	......	.....	57	234	167
14	Rajshahye	14	14	5,159	348	271	41	150	449	339	18
15	Rungpore	17	16	6,737	278	182	40	31	147	579	870
16	Bogra	9	7	4,202	73	88	3	13	45	73	19
17	Pubna	10	9	3,921	62	63	... .	1	28	22	3
18	Darjiling	5	4	948	76	......	... ..	...	.....	28	155
19	Julpaiguri...	9	9	971	103	7	1	......	54	620	856
	Dacca Division.										
20	Dacca	15	15	6,422	615	673	150	216	364	80	13
21	Faridpore	14	14	4,655	573	452	92	168	292	126	11
22	Backergunge	17	17	4,336	1,141	455	151	380	535	521	78
23	Mymensing	18	18	12,609	1,092	972	344	293	365	1,197	447
	Chittagong Division.										
24	Chittagong	14	12	1,376	63	42	26	15	40	138	37
25	Noakhalli	10	9	2,471	45	24	7	12	9	17	6
26	Tipperah	13	13	6,151	504	600	297	518	538	392	25
	Patna Division.										
27	Patna	19	19	5,635	516	...	1	5	355	547	405
28	Gya	14	14	9,657	858	4	3	3	131	295	1,473
29	Shahabad	14	14	5,641	664	. ....	1	3	49	1,125	2,085
30	Mozufferpore	13	13	5,154	391	... ..	14	......	25	647	1,196
31	Durbhunga	11	11	6,359	368	......	......	......	4	883	1,644
32	Sarun	14	13	4,379	176	......	......	1	42	278	418
33	Chumparun	10	8	7,766	78	......	......	......	1	24	113
	Bhagulpore Division.										
34	Monghyr	14	13	6,448	162	......	......	5	8	31	191
35	Bhagulpore	13	11	9,177	114	3	2	3	9	38	37
36	Purneah	14	11	5,087	56	......	......	......	14	73	43
37	Maldah	10	10	3,584	290	131	10	30	393	332	62
38	Sonthal Pergunnahs	6	6	11,254	92	3	2	13	99	78	37
	Orissa Division.										
39	Cuttack	13	13	13,018	954	408	312	333	259	228	206
40	Poori	6	6	5,166	314	196	189	139	21	7	20
41	Balasore	10	10	6,831	757	311	184	252	330	314	213
	Chota Nagpore Division.										
42	Hazaribagh	17	14	7,833	100	......	......	......	14	44	160
43	Lohardugga	22	6	12,130	64	......	......	......	2	......	6
44	Singbhum	6	2	3,907	10	.....	......	......	4	4	9
45	Manbhum	17	15	6,147	81	15	7	28	121	74	27
	TOTAL FOR THE PROVINCE	648	602	248,751	16,316	10,675	4,702	6,777	11,021	13,187	11,369

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 18*th April* 1884.

Districts of the Bengal Province during each month of the year 1883.

5						6			7			8	9
						TOTAL.			RATIO OF DEATHS PER 1,000 OF POPULATION.				
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000, during previous five years.	Number.
98	34	8	43	5	20	931	836	1,767	1·39	1·15	1·26	1·69	1
10	14	3	2	......	9	239	225	464	·47	·42	·44	·84	2
19	3	......	14	50	52	168	129	297	·44	·31	·37	1·41	3
218	129	86	130	430	680	2,042	1,724	3,766	1·64	1·35	1·49	1·22	4
38	16	14	32	26	63	420	320	740	1·33	·92	1·11	·72	5
15	20	30	46	42	40	380	226	612	2·21	1·27	1·73	1·50	6
53	36	44	78	68	103	806	546	1,352	1·64	1·04	1·33	·99	
49	38	26	87	206	207	1,117	792	1,909	3·52	2·48	3·00	2·19	7
23	9	28	95	265	606	2,351	1,971	4,322	2·83	2·49	2·67	1·81	8
46	21	52	139	195	141	1,452	725	2,177	9·86	6·95	8·65	7·69	
69	30	80	234	460	747	3,803	2,696	6,499	3·89	3·01	3·47	2·60	
42	37	11	66	367	765	4,100	3,671	7,771	5·08	4·31	4·69	3·24	9
26	5	7	15	96	510	2,375	1,918	4,293	2·47	1·95	2·21	3·01	10
9	4	10	21	34	78	683	498	1,181	1·16	·77	·96	1·46	11
39	5	5	13	194	327	947	758	1,695	1·64	1·48	1·56	3·05	12
57	11	44	......	23	13	341	300	641	·43	·40	·42	·61	13
5	......	4	50	299	453	1,142	937	2,079	1·72	1·38	1·55	1·19	14
252	180	56	72	63	162	1,119	1,015	2,134	1·04	·98	1·01	1·06	15
2	1	......	1	......	......	140	105	245	·37	·29	·33	1·00	16
2	18	......	2	5	95	129	110	239	·19	·18	·18	1·51	17
132	16	1	......	......	......	179	153	332	2·00	2·29	2·12	·45	18
570	191	60	17	22	32	1,200	1,230	2,430	3·91	4·45	4·17	·45	19
22	13	6	1	55	604	1,157	1,040	2,197	1·11	·96	1·03	1·73	20
......	2	13	6	85	832	1,107	972	2,079	1·37	1·17	1·27	1·84	21
17	12	13	14	303	2,047	2,539	2,027	4,566	2·60	2·18	2·40	1·89	22
100	41	24	32	26	17	2,114	1,734	3,848	1·36	1·15	1·26	·82	23
10	4	......	......	......	......	159	171	330	·29	·28	·29	1·22	24
4	2	1	1	......	7	59	31	90	·14	·07	·10	·29	25
8	3	4	......	3	43	1,353	1,078	2,431	1·75	1·44	1·60	1·01	26
428	375	71	42	15	8	1,271	981	2,252	1·48	1·09	1·28	1·53	27
2,969	2,484	407	153	14	1	4,192	3,745	7,937	4·01	3·46	3·73	1·77	28
1,774	1,075	195	52	19	1	3,470	2,909	6,379	3·65	2·86	3·24	1·21	29
327	345	334	442	97	......	1,885	1,542	3,427	1·48	1·17	1·32	2·47	30
137	95	16	......	......	......	1,523	1,256	2,779	1·17	·93	1·05	1·40	31
113	155	59	16	30	2	579	535	1,114	·53	·44	·48	·92	32
24	99	223	45	......	......	285	244	529	·32	·28	·30	2·13	33
144	341	77	57	17	4	455	420	875	·46	·41	·44	1·64	34
13	61	120	73	134	15	290	218	508	·29	·22	·25	2·07	35
11	12	18	97	83	......	196	155	351	·20	·16	·18	2·16	36
3	......	1	......	45	41	581	467	1,048	1·67	1·28	1·47	1·21	37
25	4	2	16	77	13	214	155	369	·27	·19	·23	·78	38
279	379	408	340	231	119	1,795	1,707	3,502	2·04	1·86	1·95	2·82	39
319	137	41	11	15	27	630	492	1,122	1·41	1·11	1·26	3·97	40
153	54	36	14	49	97	1,089	918	2,007	2·35	1·89	2·12	4·20	41
178	274	38	15	......	......	383	340	723	·70	·60	·65	·77	42
315	270	48	......	......	......	277	259	536	·34	·31	·33	·79	43
......	2	15	......	......	......	20	14	34	·07	·04	·06	·69	44
1	3	3	17	15	1	186	126	312	·35	·23	·29	·98	45
6,965	6,994	2,613	2,289	3,725	8,132	49,260	41,179	90,439	1·50	1·23	1·36	1·61	

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Annual Form No. VIII.—*Deaths registered from* SMALL-POX *in the*

1	2	3		4						
		Circles of Registration.		Villages.						
Number.	Districts.	Number in each district.	Number from which deaths from Small-pox were reported.	Number in each district.	Number from which deaths from Small-pox were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan	20	10	3,667	26	17	11	15	9	9
2	Bankura	13	4	5,460	5	2	2	......	2	......
3	Birbhum	8	1	3,273	3	......	......	1	......	......
4	Midnapore	29	25	13,876	103	10	20	14	19	15
5	Hughli	12	6	1,522	10	......	......	1	1	......
6	Serampore	8	5	769	6	......	1	......	2	3
	Total of Hughli, including Serampore ...	20	11	2,201	16	.....	1	1	3	3
7	Howrah	7	3	1,487	6	......	......	1	1	2
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	7	5,078	......	12	17	4	2	3
	Suburbs of Calcutta	1	1	1	......	4	21	26	20	12
	Total of 24-Pergunnahs ...	32	8	5,079	21	16	38	30	22	15
9	Nuddea	31	3	2,964	19	......	1	1	3	8
10	Jessore	22	3	4,732	3	......	......	1	2	......
11	Murshidabad	27	13	3,585	97	3	27	52	66	79
	Khulna	14	0	2,800	7	......	......	......	3	2
	Rajshahye Division.									
13	Dinagepore	18	2	6,921	8	......	......	......	......	2
14	Rajshahye	14	6	5,159	7	......	1	1	......	......
15	Rungpore	17	1	6,737	1	......	......	......	......	1
16	Bogra	9	......	4,202	......	......	......	......	......	......
17	Pubna	10	2	3,921	3	......	......	......	......	......
18	Darjiling	5	4	943	11	......	3	10	16	21
19	Julpaiguri	9	4	971	13	......	......	3	1	8
	Dacca Division.									
20	Dacca	15	6	6,422	15	4	19	13	13	10
21	Faridpore	14	7	4,655	16	3	5	19	8	1
22	Backergunge	17	16	4,336	162	59	33	59	57	43
23	Mymensing	18	15	12,609	293	68	55	69	60	92
	Chittagong Division.									
24	Chittagong	14	3	1,376	7	2	......	1	2	2
25	Noakhali	10	7	2,471	121	37	73	88	43	9
26	Tipperah	13	11	6,451	204	37	97	109	100	114
	Patna Division.									
27	Patna	19	19	5,635	211	5	6	25	93	62
28	Gya	14	13	9,657	185	10	17	44	68	72
29	Shahabad	14	10	5,641	58	2	1	1	6	6
30	Mozufferpore	13	13	5,154	121	4	24	33	53	45
31	Durbhanga	11	11	6,359	92	9	31	34	59	60
32	Sarun	13	12	4,379	251	31	34	47	101	93
33	Chumparun	10	10	7,766	244	11	7	26	117	170
	Bhagulpore Division.									
34	Monghyr	14	14	6,449	119	3	10	40	52	70
35	Bhagulpore	13	11	6,177	178	11	17	17	18	37
36	Purneah	14	5	5,687	16	11	2	1	1	3
37	Maldah	10	7	3,584	14	1	4	1	4	......
38	Sonthal Pergunnahs	6	6	11,254	44	1	......	3	7	11
	Orissa Division.									
39	Cuttack	13	13	13,018	787	216	353	461	273	134
40	Poori	6	5	5,166	317	93	98	113	104	92
41	Balasore	10	10	6,331	347	99	229	156	50	14
	Chota Nagpore Division.									
42	Hazaribagh	17	15	7,833	92	5	7	6	9	24
43	Lohardugga	22	6	12,130	15	7	2	......	......	......
44	Singbhum	6	6	3,907	55	57	47	46	22	15
45	Manbhum	17	7	6,147	14	1	5	10	5	4
	Total for the Province ...	648	364	248,751	4,323	844	1,280	1,560	1,478	1,348

Office of the Sany. Commr. for Bengal,
The 18*th April* 1884.

Districts of the Bengal Province during each month of the year 1883.

5							6			7		8			9	
							TOTAL.			NUMBER OF THESE DEATHS AMONG CHILDREN.		TOTAL RATIO PER 1,000 OF POPULATION.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Under one year.	Under 12 years.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
25	4	......	......	......	8	10	65	43	108	21	61	·09	·05	·07	·14	1
4	1	......	......	1	1	......	7	6	13	1	2	·01	·01	·01	·14	2
......	2	2	1	......	1	1	3	5	8	...	6	·007	·01	·01	·02	3
17	7	8	7	12	8	9	73	73	146	10	39	·05	·05	·05	·37	4
1	......	1	1	1	......	......	6	...	6	2	......	·01	...	·009	·08	5
......	......	......	......	......	......	1	6	1	7	......	1	·03	·005	·01	·09	6
1	.....	1	1	1	......	1	12	1	13	2	1	·02	·001	·01	·08	
......	......	......	......	1	1	2	7	1	8	......	3	·02	·003	·01	·18	7
4	4	2	2	......	1	2	23	30	53	5	10	·02	·03	·03	·08	}8
4	2	......	......	......	2	1	54	38	92	4	20	·36	·36	·36	1·21	
8	6	2	2	......	3	3	77	68	145	9	30	·07	·07	·07	·23	
7	13	7	1	2	12	21	44	32	76	9	40	·05	·03	·04	·14	9
......	......	......	......	......	......	......	..	3	3	......	......	......	·003	·001	·05	10
30	57	10	1	......	3	7	174	161	335	68	191	·29	·25	·27	·06	11
......	1	1	1	1	2	......	7	4	11	......	4	·01	·007	·01	·004	12
1	......	......	......	......	......	......	2	1	3	......	......	·002	·001	·001	·04	13
......	3	......	......	4	......	2	5	6	11	......	4	·007	·008	·008	·01	14
......	......	......	......	......	......	......	1	...	1	......	......	·0009	......	·0004	·33	15
......	......	......	......	......	......	......	...		......	......	......		......	......	·004	16
......	1	......	......	4	......	1	1	5	6	1	......	·001	·007	·004	·01	17
......	2	......	......	1	......	......	49	13	62	1	......	·54	·19	·39	·11	18
1	......	......	......	......	......	......	6	7	13	3	......	·01	·02	·02	·21	19
2	5	1	......	......	4	21	59	33	92	1	45	·05	·03	·04	·06	20
3	1	4	1	......	1	12	39	19	58	3	5	·04	·02	·03	·17	21
48	40	43	18	23	19	40	254	228	482	43	118	·26	·24	·25	·23	22
71	57	35	30	18	40	39	344	299	643	90	250	·22	·19	·21	·15	23
1	......	......	......	......	......	......	5	3	8	3	5	·009	·004	·007	·41	24
16	1	5	4	2	2	7	193	94	287	50	128	·46	·23	·34	·82	25
40	29	13	3	2	7	7	318	246	564	[illegible]	201	·41	·32	·37	·17	26
51	35	13	9	7	3	19	167	161	328	53	173	·19	·17	·18	·43	27
61	70	46	19	13	20	85	275	259	534	147	325	·26	·24	·25	·35	28
14	8	3	....	......	5	......	18	28	46	5	38	·01	·02	·02	·34	29
14	7	4	1	3	2	4	111	83	194	46	111	·08	·06	·07	·17	30
29	4	4	6	....	......	1	127	110	237	68	145	·09	·08	·08	·19	31
110	70	37	13	14	6	26	318	264	582	135	312	·29	·22	·25	·11	32
111	104	46	26	6	5	28	381	276	657	198	368	·43	·32	·38	·35	33
30	33	10	8	1	4	5	148	118	266	49	197	·15	·11	·13	·40	34
22	30	14	10	2	11	8	97	100	197	48	96	·09	·10	·10	·37	35
5	1	1	......	......	......	1	16	10	26	1	1	·01	·01	·01	·09	36
4	3	......	......	......	1	......	11	7	18	2	10	·03	·01	·02	·12	37
11	7	5	4	8	5	19	45	35	80	6	30	·05	·04	·05	·08	38
46	26	24	21	2	5	9	811	759	1,570	396	1,168	·92	·82	·87	1·56	39
68	77	80	34	19	16	47	463	378	841	187	451	1·03	·85	·94	2·42	40
5	1	5	7	3	5	16	301	289	590	103	312	·65	·59	·62	·62	41
26	11	18	15	10	7	36	104	70	174	26	77	·19	·12	·15	·11	42
4	2	3	......	......	......	......	8	10	18	......	......	·01	·01	·01	·54	43
16	4	1	......	......	......	4	110	102	212	25	43	·39	·36	·37	·08	44
4	6	8	......	1	2	2	36	12	48	11	18	·06	·02	·04	·04	45
906	729	454	243	161	218	493	5,292	4,422	9,714	1,883	5,018	·16	·13	·14	·20	

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. IX.—*Deaths registered from* FEVERS *in*

1	2	3		4						
		Circles of Registration.		Villages.						
Number.	Districts.	Number in each district.	No. from which deaths from Fever were reported.	Number in each district.	No. from which deaths from Fever were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan ...	20	20	3,667	3,222	3,922	3,224	3,187	2,940	2,378
2	Bankura ...	13	13	5,460	3,111	1,888	1,535	1,458	1,421	999
3	Birbhum ...	8	8	3,273	2,607	1,762	1,242	1,317	1,248	835
4	Midnapore ...	29	29	13,876	9,009	3,780	3,330	3,187	2,930	2,282
5	Hughli ...	12	12	1,522	1,161	1,305	1,028	1,066	882	597
6	Serampore ...	8	8	769	617	376	308	294	256	254
	Total of Hughli, including Serampore ...	20	20	2,291	1,778	1,681	1,336	1,360	1,138	851
7	Howrah ...	7	7	1,487	954	511	406	341	207	255
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta ...	31	31	5,078	......	2,579	1,778	1,960	1,817	1,341
	Suburbs of Calcutta ...	1	1	1	....	463	342	318	283	258
	Total of 24-Pergunnahs ...	32	32	5,079	4,132	3,042	2,120	2,278	2,100	1,599
9	Nuddea ...	31	31	2,964	2,860	4,052	3,234	3,316	3,597	2,831
10	Jessore ...	22	22	4,732	3,938	5,411	3,148	3,084	3,052	2,626
11	Murshidabad ...	27	27	3,585	3,291	2,473	1,778	2,037	2,211	1,639
12	Khulna ...	14	14	2,890	2,269	1,866	1,308	1,332	1,303	1,103
	Rajshahye Division.									
13	Dinagepore ...	18	18	6,921	5,532	2,313	2,206	2,128	2,093	2,068
14	Rajshahye ...	14	14	5,159	4,717	3,322	2,448	2,236	3,380	2,114
15	Rungpore ...	17	17	6,737	3,708	2,329	1,835	1,844	1,688	1,671
16	Bogra ...	9	9	4,202	2,810	1,278	1,018	1,117	1,023	1,060
17	Pubna ...	10	10	3,921	2,686	2,734	1,452	1,425	1,709	1,423
18	Darjiling ...	5	5	943	306	73	70	72	65	89
19	Julpaiguri ...	9	9	971	368	785	605	589	627	731
	Dacca Division.									
20	Dacca ...	15	15	6,422	3,579	3,605	2,368	1,921	2,018	1,542
21	Faridpore ...	14	14	4,653	2,642	1,588	924	820	766	661
22	Backergunge ...	17	17	4,336	2,709	3,195	2,209	1,948	1,988	1,942
23	Mymensing ...	18	18	12,609	5,188	2,165	1,961	1,936	1,541	1,548
	Chittagong Division.									
24	Chittagong ...	14	14	1,376	1,086	1,339	1,090	943	682	899
25	Noakhalli ...	10	10	2,471	1,763	1,194	1,055	1,046	864	821
26	Tipperah ...	13	13	6,451	4,371	1,410	1,263	1,082	1,105	1,155
	Patna Division.									
27	Patna ...	19	19	5,635	4,006	1,541	1,354	1,245	1,849	1,522
28	Gya ...	14	14	9,657	4,822	1,800	1,345	1,502	1,752	1,950
29	Shahabad ...	14	14	5,641	4,041	1,862	1,506	1,479	1,613	1,888
30	Mozufferpore ...	13	13	5,154	3,184	1,679	1,308	1,373	1,281	1,240
31	Durbhanga ...	11	11	6,359	2,305	1,717	1,823	1,796	1,986	1,874
32	Sarun ...	13	13	4,379	2,124	765	715	769	923	997
33	Chumparun ...	10	10	7,766	2,370	1,191	1,135	1,199	1,638	1,510
	Bhagulpore Division.									
34	Monghyr ...	14	14	6,418	2,242	1,164	998	1,090	1,329	906
35	Bhagulpore ...	13	13	6,177	2,551	1,831	1,815	1,907	2,437	2,182
36	Purneah ...	14	14	5,687	3,477	3,351	2,504	2,675	2,800	2,487
37	Maldah ...	10	10	3,584	2,827	1,263	981	975	1,272	1,051
38	Southal Pergunnahs ...	6	6	11,254	4,347	1,101	1,007	986	1,208	1,196
	Orissa Division.									
39	Cuttack ...	13	13	13,018	4,759	1,475	1,813	1,113	989	762
40	Poori ...	6	6	5,166	2,383	518	465	408	416	343
41	Balasore ...	10	10	6,331	2,651	873	688	635	612	477
	Chota Nagpore Division.									
42	Hazaribagh ...	17	17	7,833	4,481	789	812	843	968	973
43	Lohardugga ...	22	22	12,130	5,735	1,275	1,316	1,503	1,713	1,654
44	Singbhum ...	6	6	3,907	1,883	450	512	433	550	452
45	Manbhum ...	17	17	6,147	3,397	586	563	711	1,107	806
	Total for the Province ...	648	648	248,751	142,731	83,949	65,425	64,785	68,430	59,343

Office of the Sany. Commr. for Bengal,

The 18th April 1884.

the Districts of the Bengal Province during each month of the year 1883.

5							6			7			8	
							Total.			Ratio of Deaths per 1,000 of Population.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
2,044	1,886	2,164	2,295	2,513	3,017	2,932	16,691	15,811	32,502	24·97	21·85	23·35	23·70	1
776	878	1,521	1,684	1,782	1,833	1,643	8,988	8,430	17,418	17·72	15·76	16·71	14·42	2
616	957	2,004	2,107	1,783	2,038	1,789	9,047	8,651	17,698	23·71	20·95	22·27	19·92	3
1,051	2,341	2,790	3,171	3,513	4,331	4,964	20,545	18,025	38,570	16·51	14·15	15·31	12·85	4
538	626	719	820	876	1,262	1,139	5,508	5,350	10,858	17·50	15·45	16·43	14·05	5
132	192	240	296	280	468	560	1,914	1,724	3,668	11·14	9·71	10·42	12·50	6
670	818	905	1,116	1,162	1,730	1,699	7,452	7,074	14,526	15·24	13·50	14·31	13·51	
226	275	394	506	641	80	692	2,889	2,464	5,353	9·12	7·72	8·42	9·25	7
1,134	1,325	1,753	1,930	2,058	2,782	3,000	12,907	10,550	23,457	15·58	13·35	14·49	16·37	8
213	251	273	247	346	637	411	2,252	1,790	4,042	15·29	17·17	16·07	22·63	
1,347	1,576	2,026	2,177	2,404	3,419	3,411	15,159	12,340	27,499	15·54	13·79	14·70	17·21	
2,879	2,154	2,605	3,486	4,431	6,363	6,357	24,985	20,720	45,705	31·00	24·17	27·60	30·20	9
2,104	2,311	2,346	2,920	3,008	6,773	7,193	24,302	20,580	44,882	25·33	20·99	23·14	18·09	10
1,178	1,363	1,748	2,362	2,852	3,839	3,254	14,618	12,116	26,734	24·92	18·92	21·79	22·02	11
824	1,168	1,258	1,552	1,652	2,674	2,741	10,159	8,782	18,941	17·87	17·16	17·53	18·65	12
1,884	1,775	1,952	2,043	2,088	2,452	2,952	14,961	11,053	26,014	19·12	15·09	17·17	18·09	13
1,690	2,519	2,689	3,651	3,702	5,099	6,851	21,293	19,038	40,331	32·25	28·06	30·12	21·91	14
1,855	2,285	2,611	3,534	3,265	4,479	5,581	18,050	14,847	32,897	16·90	14·41	15·68	11·61	15
860	1,233	1,141	1,168	1,205	1,536	1,545	7,623	6,561	14,184	20·45	18·14	19·31	15·37	16
1,107	1,598	1,771	2,032	2,581	5,205	6,337	15,491	13,943	29,434	23·89	21·01	22·43	10·13	17
95	96	71	77	70	67	74	635	284	919	7·10	4·25	5·88	4·76	18
595	581	480	538	659	838	765	4,484	3,312	7,796	14·67	11·99	13·40	11·95	19
1,200	1,546	1,584	1,824	2,238	3,951	4,555	14,887	13,471	28,358	14·39	12·44	13·39	10·36	20
614	703	783	988	1,680	3,158	3,788	9,107	7,375	16,482	11·29	8·93	10·10	8·15	21
1,501	1,608	1,639	1,815	2,342	3,333	4,190	14,733	12,977	27,710	15·13	13·99	14·57	9·83	22
1,646	1,945	1,944	2,061	2,218	2,929	3,244	13,983	11,155	25,138	9·00	7·44	8·23	4·36	23
855	881	887	837	915	963	1,153	6,318	5,126	11,444	11·88	8·53	10·10	11·06	24
761	858	775	709	849	1,111	1,298	6,055	5,286	11,341	14·58	13·03	18·81	13·12	25
998	937	1,030	1,176	1,298	1,509	1,635	7,959	6,609	14,598	10·36	8·83	9·60	7·65	26
1,633	2,200	2,434	2,143	2,606	2,112	2,151	11,838	10,952	22,790	13·78	12·19	12·97	15·25	27
2,222	3,018	4,302	3,762	3,460	2,775	2,457	15,821	14,644	30,465	15·16	13·56	14·33	12·06	28
2,330	2,548	2,958	2,497	2,261	2,148	1,809	13,612	11,278	24,890	14·32	11·11	12·66	10·27	29
1,499	1,396	1,526	1,853	3,170	2,895	2,335	12,003	9,532	21,535	9·48	7·24	8·34	7·41	30
2,175	1,946	1,664	2,390	2,928	3,179	2,718	14,536	11,960	26,496	11·21	8·94	10·06	7·76	31
1,197	1,335	1,511	1,321	1,316	1,352	1,259	8,023	5,436	13,459	7·40	4·54	5·90	3·02	32
1,331	1,460	1,404	1,836	1,588	2,119	2,098	10,562	7,997	18,559	12·13	9·39	10·78	5·94	33
1,025	1,366	1,670	1,588	1,747	1,777	1,692	9,087	7,265	16,352	9·39	7·26	8·30	10·90	34
2,579	2,395	2,470	2,311	2,590	2,942	2,541	15,305	12,785	28,090	15·63	12·95	14·28	10·92	35
2,020	1,713	1,525	1,858	2,409	3,139	3,509	17,028	13,312	30,340	18·17	14·51	16·41	16·32	36
577	607	597	781	669	1,208	1,295	6,395	4,781	11,176	18·42	13·15	15·73	16·91	37
1,263	1,423	2,035	1,814	1,799	1,606	1,651	9,542	7,637	17,179	12·15	9·75	10·95	8·15	38
697	838	877	953	958	1,228	1,602	6,566	6,240	12,806	7·48	6·80	7·13	8·57	39
260	330	401	288	259	314	881	2,319	2,124	4,443	5·19	4·80	5·00	5·91	40
391	479	461	520	622	788	877	3,810	3,613	7,423	8·25	7·46	7·85	7·19	41
964	1,196	1,632	1,884	1,985	1,653	1,473	7,940	7,232	15,172	14·57	12·93	13·73	10·30	42
1,538	1,694	1,942	1,908	2,115	1,856	1,649	10,911	9,342	20,253	13·60	11·49	12·58	12·72	43
351	378	467	494	437	499	572	3,076	2,519	5,595	10·94	8·96	9·95	9·26	44
647	675	1,153	1,177	1,004	810	791	5,582	4,087	10,269	10·62	8·79	9·70	7·72	45
54,541	61,552	70,597	77,233	85,073	103,835	113,404	494,400	419,366	913,766	15·05	12·58	13·81	11·87	

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. X.—*Deaths registered from* BOWEL-COMPLAINTS

Number. (1)	Districts. (2)	Circles of Registration. (3) — Number in each district.	Circles of Registration. (3) — Number from which deaths from Bowel-complaints were reported.	Villages. (4) — Number in each district.	Villages. (4) — Number from which deaths from Bowel-complaints were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan	20	19	3,667	284	82	66	86	98	48	33
2	Bankura	13	13	5,160	276	36	42	54	42	47	40
3	Birbhum	8	7	3,273	47	8	2	7	12	12	10
4	Midnapore	29	29	13,876	2,321	461	396	347	284	255	242
5	Hughli	12	12	1,520	341	157	146	117	116	75	82
6	Serampore	8	8	769	219	99	72	45	53	27	34
	Total of Hughli, including Serampore	20	20	2,291	560	256	218	162	169	102	116
7	Howrah	7	7	1,487	660	257	204	215	142	124	111
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	5,078	......	199	117	118	115	89	51
	Suburbs of Calcutta	1	1	1	.....	284	179	175	101	179	57
	Total of 24-Pergunnahs	32	32	5,079	550	483	296	293	216	268	108
9	Nuddea	31	27	2,964	435	82	68	48	84	64	39
10	Jessore	22	20	4,732	136	25	26	11	16	16	13
11	Murshidabad	27	23	3,585	86	17	12	13	26	40	19
12	Khulna	14	14	2,890	167	34	15	27	22	25	38
	Rajshahye Division.										
13	Dinagepore	18	17	6,921	148	32	16	14	1	40	39
14	Rajshahye	14	12	5,159	94	14	5	8	19	17	13
15	Rungpore	17	17	6,737	235	28	23	36	48	43	43
16	Bogra	9	7	4,202	33	16	6	3		2	3
17	Pubna	10	10	3,821	142	14	9	14	1	19	15
18	Darjiling	5	5	943	82	13	6	5	22	27	43
19	Julpaiguri	9	8	971	60	5	6	7	12	7	8
	Dacca Division.										
20	Dacca	15	15	6,422	670	278	150	165	269	219	113
21	Faridpore	14	14	4,655	217	81	38	39	38	22	23
22	Backergunge	17	17	4,336	407	62	48	65	68	76	39
	Mymensing	18	18	12,609	561	82	68	77	80	103	76
	Chittagong Division.										
24	Chittagong	14	14	1,376	234	37	44	39	45	57	32
25	Noakhalli	10	10	2,471	119	22	39	46	27	31	22
26	Tipperah	13	13	6,451	343	61	46	65	50	47	23
	Patna Division.										
27	Patna	19	19	5,635	1,141	289	180	148	420	333	337
28	Gya	14	13	9,657	347	48	29	54	43	64	78
29	Shahabad	14	14	5,641	517	34	44	80	66	100	87
30	Mozufferpore	13	13	5,154	840	162	145	160	215	174	201
31	Durbhanga	11	11	6,359	605	239	212	224	268	255	293
32	Sarun	13	13	4,379	1,025	282	239	249	280	306	401
33	Chumparun	10	10	7,766	193	66	18	24	46	72	20
	Bhagulpore Division.										
34	Monghyr	14	14	6,448	181	31	37	31	44	40	36
35	Bhagulpore	13	13	6,177	620	55	60	67	56	62	73
36	Purneah	14	14	5,687	240	46	17	23	36	21	21
37	Maldah	10	9	3,584	320	6	3	5	5	6	3
38	Sonthal Pergunnahs	6	6	11,254	87	28	23	16	20	20	13
	Orissa Division.										
39	Cuttack	13	13	13,018	1,839	320	254	240	200	185	186
40	Poori	6	6	5,166	1,423	203	182	180	156	125	117
41	Balasore	10	10	6,331	2,298	576	531	415	398	307	288
	Chota Nagpore Division.										
42	Hazaribagh	17	17	7,833	547	24	31	54	93	81	88
43	Lohardugga	22	22	12,130	1,119	108	133	173	193	169	186
44	Singbhum	6	6	3,907	483	65	66	58	74	61	68
45	Manbhum	17	17	6,147	469	56	40	61	83	61	57
	Total for the Province	648	628	248,751	23,120	5,123	4,084	4,056	4,552	4,221	3,814

Office of the Sany. Commr. for Bengal,
The 18*th April* 1884.

in the Districts of the Bengal Province during each month of the year 1883.

5						6			7			8	
						Total.			Ratio of Deaths per 1,000 of Population.				
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
40	38	50	68	62	64	461	274	735	·68	·37	·52	·80	1
49	70	20	27	27	26	296	184	480	·58	·34	·46	·61	2
9	10	5	7	11	19	78	34	112	·20	·08	·14	·21	3
287	350	330	364	397	523	2,388	1,848	4,236	1·91	1·15	1·67	1·53	4
104	104	117	102	122	133	662	713	1,375	2·10	2·05	2·08	1·73	5
40	49	50	47	77	92	358	327	685	2·05	1·84	1·94	2·81	6
144	153	167	149	199	225	1,020	1,040	2,060	2·09	1·98	2·03	2·11	
124	196	208	256	295	318	1,185	1,265	2,450	3·74	3·96	3·85	3·39	7
83	61	98	86	111	133	717	514	1,261	·86	·68	·77	·84	8
89	102	78	100	152	201	971	726	1,697	6·59	6·96	6·74	8·91	
172	163	176	186	263	334	1,688	1,270	2,958	1·73	1·41	1·58	1·03	
90	155	86	70	70	85	571	370	941	·70	·43	·56	·65	9
11	8	8	8	14	23	134	45	179	·13	·04	·09	·17	10
8	19	15	13	13	18	129	93	222	·21	·14	·18	·35	11
18	19	22	13	37	34	206	98	304	·36	·19	·28	·24	12
26	19	23	16	11	30	193	94	287	·24	·12	·18	·23	13
5	5	14	9	16	27	99	53	152	·15	·07	·11	·08	14
41	46	36	40	49	68	293	208	501	·27	·20	·23	·23	15
8	1	5	2	11	3	46	22	68	·12	·06	·09	·1[illegible]	16
48	29	25	20	29	28	171	120	291	·26	·18	·22	·21	17
69	18	7	8	10	11	134	105	239	1·49	1·57	1·53	·96	18
7	8	24	9	16	5	80	34	114	·26	·12	·19	·17	19
156	131	146	238	269	396	1,374	1,156	2,530	1·32	1·06	1·19	·98	20
17	28	14	65	62	94	310	211	521	·38	·25	·31	·25	21
45	35	41	42	68	130	413	306	719	·42	·32	·37	·26	22
55	50	61	69	73	83	516	360	876	·33	·24	·28	·22	23
41	44	26	19	54	55	250	243	403	·47	·40	·43	·67	24
10	7	11	13	14	12	152	92	244	·36	·22	·29	·20	25
20	27	38	26	57	41	273	228	501	·35	·30	·32	·20	26
470	488	340	315	273	277	2,115	1,753	3,868	2·46	1·95	2·20	2·29	27
118	175	163	97	82	69	590	430	1,020	·56	·39	·48	·48	28
110	142	93	75	86	57	558	316	874	·58	·31	·44	·43	29
158	155	147	146	144	142	1,251	698	1,949	·98	·53	·75	1·19	30
247	189	238	178	213	235	1,590	1,199	2,789	1·22	·89	1·05	1·18	31
361	403	336	279	339	341	2,245	1,571	3,816	2·07	1·33	1·70	1·55	32
22	31	60	24	19	24	264	162	426	·30	·19	·24	·28	33
42	75	50	40	43	49	308	210	518	·31	·20	·26	·42	34
104	235	305	246	280	247	1,010	780	1,790	1·03	·79	·91	·47	35
88	66	50	37	50	40	281	214	495	·29	·23	·26	·14	36
5	2	1	2	7	1	31	15	46	·08	·04	·06	·07	37
17	6	14	16	17	17	157	50	207	·19	·06	·13	·30	38
287	295	325	270	287	332	2,009	1,172	3,181	2·28	1·27	1·77	1·94	39
248	213	188	198	196	295	1,369	926	2,295	3·06	2·09	2·58	2·40	40
326	378	343	308	461	548	2,843	2,156	4,999	6·16	4·45	5·28	4·63	41
108	197	101	100	55	53	583	397	980	1·06	·70	·88	·61	42
225	354	346	194	106	92	1,331	948	2,279	1·67	1·16	1·41	1·70	43
69	72	66	58	66	60	499	284	783	1·77	1·01	1·39	1·73	44
70	68	63	65	62	47	487	255	712	·92	·47	·70	·88	45
4,674	5,173	4,787	4,445	4,863	5,678	31,981	23,289	55,270	·97	·69	·83	·85	

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. II.

STATEMENT AND MAP ILLUSTRATING THE DISTRIBUTION OF CHOLERA IN BENGAL

DURING THE YEAR 1883.

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1883.

1	2	3	4	5	6	7	8	9	10	11
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each Sub-division.	Number of those: Affected by Cholera.	Number of those: Not affected by Cholera.
Burdwan ...	1	Burdwan or Sudder ...	639,593	January 1883 ...	December 1883 ...	744	January to May	1,726	88	1,638
	2	Kalna	237,607	Ditto ...	Ditto ...	549	Ditto	701	67	634
	3	Cutwa	230,209	Ditto ...	August ...	243	April to July	528	30	498
	4	Ramgunge	284,414	March ...	September ...	231	March to May	712	35	677
		District Total ...	1,391,823			1,767		3,667	220	3,447
Bankura ...	5	Bankura or Sudder ...	647,085	January ...	August ...	154	Not severe	3,956	39	3,917
	6	Bishenpore	394,667	Ditto ...	December ...	310	January to March ...	1,504	47	1,457
		District Total ...	1,041,752			464		5,460	86	5,374
Birbhum ...	7	Soori or Sudder	483,921	February ...	December ...	284	May, November and December.	1,905	51	1,854
	8	Rampurhat	310,507	April ...	Ditto ...	13	Not severe	1,368	5	1,363
		District Total ...	794,428			297		3,273	56	3,217
Midnapur ...	9	Midnapur or Sudder ...	1,269,255	January ...	December ...	770	December	8,939	297	8,642
	10	Ghattal	287,333	Ditto ...	Ditto ...	574	January to April ..	913	83	830
	11	Tumlook	479,218	Ditto ...	Ditto ..	1,031	January to April and October to December.	1,639	251	1,388
	12	Contai	481,996	Ditto ...	Ditto ...	1,391	January and February, April to June and September to December.	2,385	329	2,056
		District Total ...	2,517,802			3,766		13,876	960	12,916
Hughli	13	Hughli or Sudder	308,217	January ...	December ...	498	January and March to May.	873	59	814
	14	Jehanabad	352,596	Ditto ...	Ditto ...	242	March, April and December.	649	58	591
		District Total ...	660,813			740		1,522	117	1,405
Serampore ...	15	Serampore	351,955	January ...	December ...	612	January to May and October to December.	769	106	663
Howrah ...	16	Howrah or Sudder ...	311,644	January ...	December ...	1,159	January to June and October to December.	373	114	259
	17	Ooloobariah	323,737	Ditto ...	Ditto ...	750	January to May, July and October to December.	1,114	236	878
		District Total ...	635,381			1,909		1,487	350	1,137
24-Pergunnahs	18	Sudder, including Barripore.	835,899	January ...	December ...	3,644	January to June and October to December.	1,826	326	1,500
	19	Dum-Dum	31,678	Ditto ...	Ditto ...	70	January to May and September to December.	43	36	7
	20	Barrackpore	62,417	Ditto ...	Ditto ...	203	March to June and October to December.	67	18	49
	21	Baraset	272,574	Ditto ...	Ditto ...	550	January to May and October to December.	813	90	723
	22	Busirhat	323,061	Ditto ...	Ditto ...	434	January, March and April.	761	104	657
	23	Diamond Harbour... ...	344,330	Ditto ...	Ditto ...	1,589	January to April and November and December.	1,569	245	1,324
		District Total ...	1,869,859			6,499		5,079	819	4,260
Nuddea... ...	24	Sudder or Kishnaghur ...	374,973	January ...	December ...	2,932	January to June ...	544	354	190
	25	Ranaghat	241,205	Ditto ...	Ditto ...	2,341	January to May and October to December.	511	247	264
	26	Kushtia	446,094	Ditto ...	Ditto ...	712	January, April, May, November and December.	861	203	658
	27	Choosdanga	254,295	Ditto ...	Ditto ...	980	January, March to May and November and December.	452	111	341
	28	Meherpore	338,554	Ditto ...	Ditto ...	806	April to June	596	120	476
		District Total ...	1,655,721			7,771		2,964	1,035	1,929

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1883—continued.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS.	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each Sub-division.	NUMBER OF THOSE — Affected by Cholera.	NUMBER OF THOSE — Not affected by Cholera.
Jessore ...	29	Jessore or Sudder ...	628,939	January 1883 ...	December 1883 ...	1,361	January, April, May and December.	1,493	209	1,284
	30	Jhenida	326,835	Ditto ...	Ditto ...	601	January, April, May, November and December.	824	125	699
	31	Magura	293,303	Ditto ...	Ditto ...	72	December	877	31	846
	32	Narail	328,172	Ditto ...	Ditto ...	173	January	802	87	715
	33	Bongong	362,126	Ditto ...	Ditto ...	2,086	January to June and December.	736	275	461
		District Total ...	1,939,375			4,293		4,732	727	4,005
Khulna ...	34	Khulna or Sudder ..	344,380	January ...	December ...	662	January to May, July, November and December.	886	195	691
	35	Satkhira	434,766	Ditto ..	Ditto ...	627	January to May, November and December.	1,155	155	1,000
	36	Bagirhat	300,793	Ditto ...	Ditto ...	406	January, March, April, November and December.	849	147	702
		District Total ...	1,079,948			1,695		2,890	497	2,393
Murshidabad	37	Berhampore or Sudder ...	651,745	January ...	October ...	547	April and May	1,381	133	1,248
	38	Kandi	223,958	Ditto ...	Ditto ...	204	January, February and May.	618	40	578
	39	Lalbag	147,007	Ditto ...	August ...	249	January, February, April and May.	600	31	569
	40	Jungipur	304,080	Ditto ..	December ...	181	January, November and December.	986	25	961
		District Total ..	1,226,790			1,181		3,585	229	3,356
Dinagepore ...	41	No Sub division—District	1,514,346	January ...	December ...	641	May and June	6,921	106	6,815
Rajshahye ...	42	Beauleah or Sudder ...	599,547	January ...	December ...	1,294	January, March to May, and November and December.	2,217	210	2,007
	43	Nattore	470,512	Ditto ...	Ditto ...	493	January, April, May, November and December.	1,580	82	1,498
	44	Nowgong	268,579	Ditto ...	Ditto ...	202	January, May and December.	1,362	56	1,306
		District Total ...	1,338,638			2,079		5,159	348	4,811
Rungpore ...	45	Rungpore or Sudder ...	672,662	January ...	December ...	557	April to July	2,436	88	2,348
	46	Bagdogra or Nilphamari .	439,486	April .	Ditto ...	* 464	May to August	392	44	348
	47	Kurigaon . . .	534,954	January ...	Ditto ...	1,016	January, May to August, October and December.	2,386	126	2,260
	48	Gyabandha	450,862	Ditto ..	June ...	97	January	1,523	20	1,503
		District Total ...	2,097,964			2,134		6,737	278	6,459
Bogra	49	No Sub-division—District	734,358	January ...	October ...	245	January and May ...	4,202	73	4,129
Pubna ...	50	Pubna or Sudder	611,964	January ...	December ...	176	December	1,826	38	1,788
	51	Serajgunge	699,764	Ditto ..	Ditto ..	63	January	2,095	24	2,071
		District Total ..	1,311,728			239		3,921	62	3,859
Darjiling ...	52	Hill Territory	92,896	June ...	September ...	150	June and July	206	40	166
	53	Terai	63,241	May ...	August ...	182	May to July	737	36	701
		District Total	156,137			332		943	76	867
Julpaiguri ...	54	Julpaiguri or Sudder .	497,779	January ...	December ...	955	May to August	814	98	716
	55	Alipore or Western Duars	83,783	February ...	November ...	1,475	April to September and November.	157	95	62
		District Total ..	581,562			2,430		971	193	778
Dacca ...	56	Dacca or Sudder	699,029	January ..	December ...	675	January, March, April and December.	2,082	141	1,941
	27	Naraingunge	470,657	Ditto	Ditto ...	483	January, February, April and December.	2,064	219	1,845
	58	Munshigunge	519,447	Ditto ...	Ditto ...	647	January, February and December.	825	174	651
	60	Manickgunge	427,217	Ditto ...	Ditto ...	392	January	1,451	81	1,370
		District Total ...	2,116,350			2,197		6,422	615	5,807

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1883—continued.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS.	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each Sub-division.	NUMBER OF THOSE Affected by Cholera.	NUMBER OF THOSE Not affected by Cholera.
Faridpore ...	60	Faridpore or Sudder ...	620,545	January 1883 ...	December 1883 ...	631	January to April and December.	1,917	167	1,750
	61	Madaripur	689,704	Ditto	Ditto	1,124	January, November and December.	1,515	333	1,182
	62	Goalundo	321,485	Ditto	Ditto	324	January, March to May and December.	1,223	73	1,150
		District Total ...	1,631,734			2,079		4,655	573	4,082
Backorgunge ...	63	Backorgunge or Sudder ...	814,595	January	December ...	1,821	January, February, April May, November and December.	1,982	550	1,428
	64	Perozopore	447,306	Ditto	Ditto	1,547	January to May, November and December.	945	339	606
	65	Patuakhally...	426,758	Ditto	Ditto	1,056	March to May and December.	1,001	209	792
	66	Bhola	212,230	Ditto	Ditto	142	January and December.	408	37	371
		District Total ...	1,900,889			4,566		4,336	1 141	3,195
Mymensing ...	67	Mymensing or Sudder	744,524	January ...	November... ...	578	January, April and May	3,339	128	3,211
	68	Nitrokona	588,115	Ditto ...	December	1,918	January to July	3,223	563	2,660
	69	Jamalpore	497,76[illegible]	Ditto	Ditto	216	January	1,879	122	1,757
	70	Kishoregunge	467,320	Ditto	Ditto	637	January to May	1,982	90	1,592
	71	Tangail or Atia	754,211	Ditto	Ditto	499	January	2,486	189	2,297
		District Total ...	3,051,966			3,848		12,609	1,092	11,517
Chittagong ...	72	Chittagong or Sudder ...	970,993	January	December	144	Not severe	1,101	38	1,063
	73	Cox's Bazar	161,348	February	June	186	April, May and June ...	275	25	250
		District Total ...	1,132,341			330		1,376	63	1,313
Noakhalli ...	74	Sudharam or Sudder ...	578,797	January	December	74	Not severe	1,835	36	1,799
	75	Fenny	241,975	Ditto	October	16	Ditto	636	9	627
		District Total ...	820,772			90		2,471	45	2,426
Tipperah ...	76	Comillah or Sudder ...	703,540	January	December	1,228	January to May	3,733	208	3,525
	77	Brahmanberiah	581,417	Ditto	Ditto	996	Ditto	1,394	206	1,188
	78	Chandpur	284,381	Ditto	Ditto	207	January, March and May	1,324	90	1,234
		District Total ...	1,519,338			2,431		6,451	504	5,947
Patna ...	79	Patna or Sudder	585,887	February	December	1,364	April to August	1,714	266	1,448
	80	Dinapore	166,128	April	September... ...	223	Ditto	349	60	289
	81	Barh	376,074	March	December	321	April to June and August	1,121	81	1,040
	82	Behar	628,767	April	November	344	May and June	2,451	109	2,342
		District Total ...	1,756,856			2,252		5,635	516	5,119
Gya ...	83	Gya or Sudder	805,364	January	December ...	3,194	May to October	3,719	345	3,374
	84	Aurungabad...	445,641	April	November ...	3,524	May to September ...	2,667	352	2,315
	85	Jehanabad	385,189	Do.	Ditto ...	955	June to August	1,454	124	1,330
	86	Nowada	488,488	Do. ...	October ...	264	August	1,817	37	1,780
		District Total ...	2,124,682			7,937		9,657	858	8,799
Shahabad ...	87	Arrah or Sudder	700,273	March	November	1,900	May to August	1,379	219	1,160
	88	Sasseram	519,207	May	September... ...	1,513	May to September ...	1,986	130	1,856
	89	Buxar	423,193	February	October	1,705	Ditto	888	176	712
	90	Bhubhua	322,236	May	December	1,261	Ditto	1,388	139	1,249
		District Total ...	1,964,909			6,379		5,641	664	4,977
Mozufferpore ..	91	Mozufferpore or Sudder ...	1,019,635	April	November	1,074	May to October	2,043	140	1,903
	92	Sitamurhi	837,894	February	Ditto	2,049	Ditto	1,404	198	1,206
	93	Hajipur	724,531	April	September ...	304	May and June ...	1,707	53	1,654
		District Total ...	2,582,060			3,127		5,154	391	4,763
Durbhanga ...	94	Durbhanga or Sudder ...	969,999	May	August	993	May and June	2,260	123	2,137
	95	Tajpore	755,943	April	Ditto	281	Ditto	1,173	61	1,112
	96	Modhubanni	907,505	May	September ...	1,505	May to July	2,926	84	2,842
		District Total ...	2,633,447			2,779		6,359	268	6,091
Sarun ...	97	Chupra or Sudder	985,834	April	November	949	May to August	1,643	142	1,501
	98	Sewan	749,482	March	September... ...	104	Not severe	1,461	21	1,440
	99	Gopalgunge	545,066	May	December... ...	61	Ditto	1,275	13	1,262
		District Total ...	2,280,382			1,114		4,379	176	4,203

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1883—concluded.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB DIVISIONS AS SHOWN ON THE MAP	Populations of the Sub divisions	Date of first case of Cholera in the Sub divisions as indicated by mortality.	Date of last case of Cholera in the Sub divisions as indicated by mortality.	Total deaths from Cholera in the Sub divisions during the year	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS	Number of villages in each Sub-division.	NUMBER OF THOSE Affected by Cholera.	NUMBER OF THOSE Not affected by Cholera.
Chumparun	100	Motihari or Sudder	1 017 55[illegible]	May 1883	August 1883	[illegible]	June August and September	4 594	74	4,520
	101	Bettiah	704 0[illegible]2	April	October	15	Not severe	3 172	4	3,168
		District Total	[illegible]			[illegible]		7 766	78	7,688
Monghyr	102	Monghyr or Sudder	[illegible]	March	December	[illegible]47	June to August	2 381	88	2,296
	103	Beguserai	[illegible]	April	November	167	June and August	1 633	49	1,574
	104	Jamui	[illegible]	Do	September	[illegible]	July and August	2 441	25	2 416
		District Total	[illegible]771			875		6,448	162	6 286
Bhagulpore	105	Bhagulpore or Sudder	[illegible]	January	December	326	September to November	1 348	85	1,263
	106	Banka	420 3[illegible]	April	Ditto	138	August and November	2 546	22	2,524
	107	Madhepura	[illegible]	June	November	34	Not severe	900	6	894
	108	Supole	[illegible]	May	June	10	Ditto	1 383	1	1,382
		District Total	[illegible]			[illegible]		6 177	114	6,063
Purneah	109	Purneah or Sudder	[illegible]	April	November	135	October and November	1 430	18	1,412
	110	Arariah	[illegible]	May	Ditto	20	Not severe	874	3	871
	111	Kissengange	[illegible]	April	Ditto	118	June	1,[illegible]	27	1 [illegible]
	112	Kutwa	303 7[illegible]2	Do	June	48	May	1,391	8	1 383
		District Total	1 818 [illegible]			321		5 [illegible]	56	5,[illegible]
Maldah	113	No Sub division—District	710 448	January	December	1 048	January, April and May	3,[illegible]	290	3,204
Sonthal Pergunnahs	114	Doomka	[illegible]	March	August	10	Not severe	2 909	2	2 907
	115	Rajmehal	[illegible]	January	December	177	April May and November	1,[illegible]	[illegible]	1 287
	116	Pakour	[illegible]	April	May	[illegible]	Not severe	1 2[illegible]1	7	1 244
	117	Deoghur and Jamtara	[illegible]	January	November	159	April to June	4 010	42	3 968
	118	Godda	[illegible]	July	August	2	Not severe	1,758	2	1,756
		District Total	[illegible]			[illegible]		11 254	92	11,162
Cuttack	119	Cuttack or Sudder	72[illegible]	January	December	[illegible]00	January, February and July to October	4 620	262	4,367
	120	Kendrapara	[illegible]	Ditto	Ditto	2,115	Throughout the year	4 400	476	3 924
	121	Jajpur	[illegible]	Ditto	Ditto	487	January, February and August	989	216	3,773
		District Total	[illegible]			3 [illegible]02		13,018	954	12,064
Poori	122	Poori or Sudder	565 082	January	December	835	January to March, July and August	3,852	210	3,642
	123	Khurda	323 405	Ditto	Ditto	287	Ditto	1,314	104	1,210
		District Total	888 487			1 122		5,166	314	4,852
Balasore	124	Balasore or Sudder	519 707	January	December	1,283	January to July and December	3,322	476	2,846
	125	Bhuddrak	4[illegible]73	Ditto	Ditto	724	January to July	3,009	281	2,728
		District Total	94[illegible]80			2 007		6,331	757	5,574
Hazaribagh	126	Hazaribagh or Sudder	672,238	April	September	496	June to August	4,280	66	4,214
	127	Giridhi or Pachumba	432 504	Do	October	227	June and August	3 553	34	3,519
		District Total	1 104 742			723		7,833	100	7,733
Lohardugga	128	Ranchi or Sudder	1 124 432	April	April	2	Not severe	9,271	7	9,264
	129	Palamow	484 822	June	September	534	July and August	2,859	57	2,802
		District Total	1,609 244			536		12,130	64	12,066
Singbhum	130	No Sub division—District	[illegible]1 984	April	September	34	Not severe	3,907	10	3,897
Manbhum	131	Purulia or Sudder	881 [illegible]44	January	November	147	Not severe	4,366	41	4,325
	132	Govindpore	106 584	Do	December	165	March to May	1,781	40	1,741
		District Total	1,058,2[illegible]8			312		6,147	81	6,066

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th April* 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. III.

SUMMARY OF SANITARY WORKS, IMPROVEMENTS, &c., CARRIED OUT IN TOWNS AND DISTRICTS

DURING THE YEAR 1883.

Summary of Sanitary Works, Improvements, &c., which were carried out in Towns and Districts during the year 1883.

CONSERVANCY.

In Towns.

Latrines and Urinals.

Public latrines and urinals were constructed in the following Municipalities:—

Towns.		Districts.		Number, with Remarks.
Bankura	...	Bankura	...	2.
Midnapore	...	Midnapore	...	1.
Tumlook	...	Ditto	...	1.
Ghatal	...	Ditto	...	5. Two of these are in progress.
Bhudosher	...	Hughli	...	Number not mentioned.
Bydobatti	...	Ditto	...	Latrines and urinals, number not mentioned.
Utterpara	...	Ditto	...	Number not mentioned.
Serampore	...	Ditto	...	Latrines and urinals, number not mentioned.
Bansbaria	...	Ditto	...	Number not mentioned.
Hughli	...	Ditto	..	3.
Howrah	...	Howrah	...	Latrines and urinals, number not mentioned.
Krishnaghur	...	Nuddea	...	In progress, number not stated.
City Murshidabad		Murshidabad	...	1 for males and females.
Kandi	...	Ditto	...	4.
Dinagepore	...	Dinagepore	...	4. Two of these are in progress.
Nattore	...	Rajshahye	...	2 with sheds for mehters and ponies.
Bogra	...	Bogra	...	1.
Sherpur	...	Ditto	...	4. Two of these are urinals.
Darjiling	...	Darjiling	...	7.
Kurseong	...	Ditto	...	2.
Julpaiguri	...	Julpaiguri	...	5.
Barisal	...	Backergunge	...	1.
Sherpore	..	Mymensing	...	3.
Jamalpore	...	Ditto	...	10.
Nasirabad	...	Ditto	...	2
Brahmanberia	...	Tipperah	...	Some in progress, number not stated.
Sudharam	...	Ditto	..	4 urinals.
Barrh	...	Patna	...	Number not mentioned.
Futuha	...	Ditto	...	Ditto.
Jehanabad	...	Gya	...	Ditto.
Gya	...	Do.	...	2. One temporary and one in progress, including buckets, pans, baskets, &c.
Buxar	...	Shahabad	...	1.
Arrah	...	Ditto	...	7 urinals, in progress.
Durbhanga	...	Durbhanga	...	8. Three of these are in progress.
Mudhubani	...	Ditto	...	1 in progress.
Sewan	...	Sarun	...	1.
Chapra	...	Ditto	...	7. One includes cost of land: the other six are DeAbrue's moveable latrines.
Ditto	...	Ditto	...	1. One urinal.
Monghyr	...	Monghyr	...	1.
Bhagulpore	...	Bhagulpore	...	3. Two of these have galvanized iron roofs—1 is in progress. Also some mat latrines, number not stated.
Purneah	...	Purneah	...	1.
Sahebgunge	...	Sonthal Pergunnahs	...	8 corrugated iron urinals.
Cuttack	...	Cuttack	...	2. One latrine and 1 urinal.
Puri	...	Puri ...	...	1.
Balasore	...	Balasore	...	11. Eight of these are urinals.
Daltongunge	...	Lohardugga	...	Number not mentioned.
Ranchi	...	Ditto	...	Ditto.
Gharwa	..	Ditto	...	Ditto.
Purulia	...	Manbhum	...	2.

Carts, bullocks, &c.

Conservancy and night-soil carts, with bullocks, &c., for the more efficient carrying out of conservancy arrangements, were provided in the under-mentioned Municipalities:—

Towns.		Districts.		Nature of work.
Bansbaria	...	Hughli	...	Conservancy carts, number not mentioned.
Santipur	...	Nuddea	...	5 Ditto, with 2 bullocks.
Darjiling	...	Darjiling	...	6 Hand-carts for conveying cook-room washings.
Jalpaiguri	...	Jalpaiguri	...	2 Conservancy carts.
Nasirabad	...	Mymensing	...	4 Two Conservancy and 2 Watering carts.
Brahmanberia	...	Tipperah	...	1 Conservancy cart.
Patna	...	Patna	...	8 Ditto.
Obra	...	Gya	...	Conservancy carts, number not mentioned.
Nobinnagar	...	Do.	...	Ditto.
Daudnagar	...	Do.	...	Ditto.
Aurangabad	...	Do.	...	Ditto.
Sherghatti	...	Do.	...	2 Conservancy carts.
Jehanabad	...	Do.	...	2 Wheel barrows.
Durbhanga	...	Durbhanga	...	4 One Watering (in progress) and 3 Night-soil carts.
Madhubuni	...	Ditto	...	Conservancy carts, number not stated.
Puri	...	Puri	...	30 Night soil-carts.

Establishment.

The conservancy establishment was strengthened in the Bettiah and Behar Municipalities.

Buildings constructed for Conservancy purposes.

Under this head may be enumerated 13 latrine sheds in *City Murshidabad*; a small shed and barracks for domes (in progress) in the *Patna* Municipality; barracks for mehters (1 roofed with iron) and a new pound-house in *Darjiling*; a stable for conservancy cattle in *Pubna*; mehters' huts in *Muktagachi* in Mymensing; a cart-shed, a bullock-shed, and a shed for dry earth, including cost of land in *Chupra*; a cart-shed in *Monghyr*; 1 bullock-shed in *Bhagulpore*; 3 houses for mehters and 1 godown for carts and bullocks in *Kissengunge* in Purneah; 2 conservancy depôts in *Cuttack*; and a pound-house, including gravelling of compound thereof, in *Purulia* in Manbhum.

Trenching Night-soil.

The system of burying night-soil in trenches was extended to the three remaining wards in the *Puri* town; and land was taken up or acquired for trenching night-soil in *Motihari* in Chumparun, in *Jamalpore* in Monghyr, in *Chupra*, and in *Durbhanga*.

General Conservancy Improvements.

Not the least important of the sanitary measures carried out during the year were the following:—Some bustees in the *Suburbs of Calcutta*, (at a cost of Rs. 1,110), in *Howrah* (at a cost of Rs. 1,130), and in *Serampore* were reclaimed and improved with regard to roads, drainage, water-supply, houses, &c. A number of thatched and unsightly native houses were demolished in the *Darjiling* Municipality. Three swamps and a foul tank were filled up in *Sudharam* in Tipperah. Arrangements have been made for a wire tramway for the removal of sweepings and rubbish to a remote spot, ten dust-bins were put up at various points, and stone-ware pipes were laid for cook-room washings in certain localities in *Darjiling*. The Latrine Act was introduced into the *Patna* Municipality, and domes were imported from Behar for carrying out its details. Jungle was reclaimed in *Manikgunge* in Dacca at a cost of Rs. 1,280. Trees were planted on the road-sides in *Tangail* in Mymensing, on five roads in the Backergunge district at a cost of Rs. 899, and in the Gya district, (6,118, at a cost of Rs. 6,845).

DRAINAGE.

In Towns.

General Drainage Schemes carried out or in hand.

In the *Serampur* Municipality a drainage scheme has been devised at an estimated cost of Rs. 30,091. Large open drains were constructed in connection with the pits and excavations in the *English Bazar* Municipality for carrying off surface impurities and keeping the inhabited parts of the town and villages dry and well drained. At *Ghattal* in Midnapore a scheme is on foot for opening up a sluiced khal for its thorough drainage. A survey has been made of the *Berhampore* town in Murshidabad, and levels taken for improving its defective drainage. Further improvements to the drainage scheme in *Lalbagh*, in the same district, by a system of subsidiary drains are to be effected, and a beginning was made by constructing a surface drain in ward Shahanuggur. The drainage works in *Azimgunge*, also in the same district, were commenced. A scheme is on foot in the *Dinagepore* Municipality, in extension of the present one—and will shortly be accomplished—for the drainage of its western part by means of a canal with a sluice gate opening into the Purnabhaba river, six miles south. Much is being done for the improvement of the badly sanitated and straggling town of *Chittagong*. Government has granted Rs. 10,000 for its sanitation, and a survey is being made, having for its object the provision of pucca drains and a bridge, the improve- of an important drain running through the bazar, and the re-digging of the Chaktai khal, with the view of improving the drainage of a large section of the town. In the *Cuttack* town the drainage scheme was further improved by the construction of a branch drain from Gooptipool, by which surface water will be carried off from the central part of the town; by building some bridges over the drains; and by lining the latter with stone to prevent percolation of their contents into the sub-soil.

Other Drainage Measures.

In the undermentioned Municipalities new drains, with the necessary culverts, pipes, bridges, &c., were constructed; or alterations, &c., of existing drains calculated to improve drainage, such as providing culverts, pipes, sluices, protecting walls, &c., re-excavating, rectifying levels, removing of obstructions, carrying out extensions, &c., were effected:—

Towns.	Districts.	Towns.	Districts.
Ranigunge ...	Burdwan.	Howrah ...	Howrah.
Cutwa ...		Goburdanga ...	24-Pergunnahs.
Bishenpore ...	Bankura.	Itanda ...	
Bankura ...		Suburbs of Calcutta	
Sonamukhi ...		Rajpore ...	
Kotalpore ...		South Barrackpore ...	
Pattroshair ...		North Barrackpore ...	
Midnapore ...	Midnapore.	South Dum-Dum ...	
Tumlook ...		North Dum-Dum ...	
Utterpara ...	Hughli.	Barripore ...	
Bansbaria ...		South Suburban ...	
Chinsurah ...		Baranagore ...	
Bydobatti ...		Kumarkhalli ...	Nuddea.
Bhuddesher ...		Krishnaghur ...	
		Santipore	

Towns.	Districts.
Jessore	Jessore.
Kotchandpore	
Chanduria	
Debhata	Khulna.
Satkhira	
Kandi	
City Murshidabad	Murshidabad.
Berhampore	
Dinagepore	Dinagepore.
Maldah	Maldah.
English Bazar	Ditto.
Nattore	Rajshahye.
Rungpore	Rungpore.
Sherpur	Bogra.
Bogra	
Serajgunge	Pubna.
Pubna	
Manikgunge	Dacca.
Faridpore	Faridpore.
Barisal	Backergunge.
Muktagacha	
Sherpore	Mymensing.
Jamalpore	
Brahmanberia	Tipperah.
Chittagong	Chittagong.
Sudharam	Noakhalli.
Patna	
Mokameh	Patna.
Khagoul	
Futuha	

Towns.	Districts.
Nawada	Patna.
Behar	
Daudnaggar	
Gya	Gya.
Aurangabad	
Jugdispore	
Nasrigunge	Shahabad.
Buxar	
Mozufferpore	
Sitamurhi	
Mahner	Mozufferpore.
Lalgunge	
Hajipore	
Durbhanga	Durbhanga.
Madhubuni	
Revilgunge	
Chupra	Sarun.
Sewan	
Bettiah	Chumparun.
Jamalpore	Monghyr.
Kharrakpore	
Sahebgunge	Sonthal Pergunnahs.
Jaipur	Cuttack.
Cuttack	
Puri	Puri.
Hazaribagh	Hazaribagh.
Chatra	
Ranchi	Lohardugga.
Chyebassa	Singbhum.
Purulia	Manbhum.

In Districts.

Drainage Works carried out in Districts.

The Surpai khal in the *Midnapore* district was drained at a cost of Rs. 58,000. A bridge was constructed over the Ari khal on the Mugra Mahomed road in *Hughli* at a cost of Rs. 3,495. In the 24-*Pergunnahs* district, a khal along the Diamond Harbour road from Saracole to Sorisa was improved, and the Dhapa ditch was excavated and provided with a foot-path and five culverts. The cost of these works amounted to Rs. 16,434. The drainage of the fever-stricken district of *Nuddea* was considerably improved in the manner described in section IX of the Report, at a cost of over Rs. 20,000. In the *Murshidabad* district the two main cuts—the northern and the southern—about 8½ miles in length, which drain the *Berhampore* town and the low levels and bheels between the town and Gobra nulla, and the Farashdanga cut which, drains the Kaliganj bheel, which receives the drainage of the villages on both sides of it, were cleared and deepened. New drains were provided and the roads raised to remove obstructions to drainage in the *Dinagepore* district. In the *Purneah* district three bridges were constructed at a cost of Rs. 14,518. A survey of the great swamp south of Rajmehal in the *Sonthal Pergunnahs* was undertaken with a view to improve its drainage.

ROADS.

In Towns.

New Roads.

New roads with the necessary appliances for securing drainage, waterway, &c., were constructed, or were in progress of construction, and existing roads were extended or widened in the undermentioned Towns:—

Towns.	Districts.
Burdwan	
Cutwa	Burdwan.
Dainhat	
Ghatal	
Chundracona	
Ramjibanpore	Midnapore.
Khirpai	
Bansberia	Hughli.
Utterpara	
Suburbs of Calcutta	
Itanda	
Goberdanga	
Bussirhat	
North Dum-Dum	24-Pergunnahs.
Joynuggur	
Barripore	
South Suburban	
Rajpore	
Santipore	
Meherpore	
Kumarkhali	
Kushtia ...	Nuddea.
Krishnaghur	
Ranaghat	
Kotchandpore	Jessore.
Chanduria	
Satkhera	Khulna.
Debhata	

Towns.	Districts.
English Bazar	Maldah.
Bauleah	Rajshahye.
Sherpur	Bogra.
Serajgunge	Pubna.
Darjiling	Darjiling.
Faridpore	
Goalundo	Faridpore.
Madaripore	
Bazitpore	
Kishorgunge	
Tangail	Mymensing.
Jamalpore	
Sherpore	
Brahmanberia	Tipperah.
Chittagong	Chittagong.
Patna	Patna.
Behar	
Gya	Gya.
Mozufferpore	Mozufferpore.
Durbhanga	Durbhanga.
Bettiah	Chumparun.
Jamalpore	Monghyr.
Ranigunge	Purneah.
Purneah	
Cuttack	Cuttack.
Kendrapara	
Ranchi	Lohardugga.
Raghoonathpore	Manbhum.

The roads in the following Municipalities were newly metalled, or the process was being proceeded with at the close of the year:—

Roads newly Metalled.

Towns.	Districts.	Towns.	Districts.
Chinsurah	Hughli.	Bogra	Bogra.
Bansberia	Hughli.	Madaripore	Faridpore.
Howrah	Howrah.	Muktagacha	Mymensing.
South Dum-Dum	24-Pergunnahs.	Lalgunge	Mozufferpore.
Baranagore	24-Pergunnahs.	Hajipore	Mozufferpore.
Santipore	Nuddea.	Mozufferpore	Mozufferpore.
Ranaghat	Nuddea.	Durbhanga	Durbhanga.
Birnagore	Nuddea.	Chupra	Sarun.
Chagda	Nuddea.	Bettiah	Chumparun.
Satkhira	Khulna.	Bhagulpore	Bhagulpore.
Kandi	Murshidabad.	Kissengungo	Purneah.
Maldah	Maldah.	Cuttack	Cuttack.
English Bazar	Maldah.	Lohardugga	Lohardugga.
Beauleah	Rajshahye.	Ranchi	Lohardugga.

In Districts.

In the undermentioned places important roads, whereby the sanitary condition of the villages through which they were laid was greatly improved, were constructed. They were in all cases provided with the necessary culverts, pipes, bridges, &c., for securing adequate waterway.

Districts.	Number.	Probable Cost.
		Rs.
Burdwan	Not stated	55,531
Bankura	20	Not stated.
Hughli	Not stated	23,128
Khulna	Ditto	3,121
Dinagepore	2	Not stated.
Pubna	Not stated	Ditto.
Noakhalli	2	Ditto.
Patna	3	Ditto.
Monghyr	14	1,165
Purneah	7	4,247

By Private Individuals.

Moharaj Luckessur Singh, Bahadoor, provided a road in the Sudder sub-division of Monghyr at a cost of Rs. 400, and three kutcha roads were constructed by private individuals in the Sudder sub-division of Howrah at a cost of Rs. 871-8.

WATER-SUPPLY.

In Towns.

Water-supply Schemes undertaken.

In the *Burdwan* Municipality the water-works scheme was further progressed with (*vide* section IX of the Report) at a total expenditure of Rs. 1,10,519. The water-supply scheme in the *Darjiling* Municipality was extended and supplemented in the manner described in section IX of the Report, at a cost of Rs. 8,057. This scheme was also extended to the *Kurseong* town at a cost of Rs. 2,466. In the *Berhampore* town in Murshidabad a channel with sluice was constructed through Gora Bazar for the purpose of flushing several tanks and shallow basins with water from the Bhagiruthi river, and thus securing fresh water for the inhabitants. In the *Nattore* town in Rajshahye river water was introduced into the municipal tank and the outer moats, by deepening and widening the mouth of the Narud, and a channel was excavated to expel the foul water of the town. In the *Dacca* town the defects of the water-works were rectified (*vide* section IX of the Report). The project for the supply of filtered water to the town of *Bhagulpore*, referred to in the Report for 1882, was submitted to Government for approval at the close of the year under review. The water-supply of the *English Bazar* town was greatly improved by re-digging and cleaning eight large tanks in parts of the town away from the river, and by providing four of them with masonry ghâts.

Tanks provided in special localities.

New tanks were excavated, and the existing ones either re-excavated, cleaned or improved, and the foul and stagnant ones filled up in the following Municipalities:—

Towns.	Districts.	Number.	Remarks.
Ranigunge	Burdwan	1	for hospital newly excavated.
Soori	Birbhum	1	re-excavated.
Tumlook	Midnapore	1	ditto.
Utterpara	Hughli	1	newly excavated.
Howrah	Howrah	1	newly excavated. Some private tanks also were fenced.
Barripore	24-Pergunnahs	1	newly excavated.
Suburbs of Calcutta	24-Pergunnahs	1	ditto.
Mohespur	Jessore	1	re-excavated.
City Murshidabad	Murshidabad	2	one filled up and 1 newly excavated.
Dinagepore	Dinagepore	1	cleaned and set apart.
Pubna	Pubna	1	newly excavated.
Madaripore	Faridpore	1	ditto.
Perozepore	Backergunge	1	ditto.
Brahmanberia	Tipperah	1	ditto.
Monghyr	Monghyr	1	ditto.
Ranchi	Lohardugga	2	one deepened and one newly excavated (in progress.)

Wells provided in special localities.

New wells were sunk, or the existing ones improved generally, &c., in the following Towns:—

Towns.	Districts.	Number.	Remarks.
Ranigunge ...	Burdwan	1	Cover for mouth provided.
Bankura ...	Bankura	1	Platform provided.
Kissengunge ...	Nuddea	Not stated	Sunk.
City Murshidabad	Murshidabad	1	Do.
Kandi ...	Ditto	3	Do.
Sherpur ...	Bogra	8	Do.
Bogra ...	Bogra	8	One masonry and six kutcha wells sunk, and one cistern provided.
Serajgunge ...	Pubna	1	Sunk.
Jugdispur ...	Shahabad	1	Do.
Chupra ...	Sarun	1	Do.
Monghyr ...	Monghyr	1	Do.
Jamalpur ...	Ditto	1	Do.
Madhepura ...	Bhagalpore	6	Do.
Ranigunge ...	Purneah	2	Do.
Sahebgunge ...	Sonthal Pergunnahs ...	Not stated	Including platforms around them.
Cuttack ...	Cuttack	2	Sunk.
Daltongunge ...	Lohardugga	...	Chains and buckets for wells provided.

In Districts.

Water was brought down through the Kana Nuddi from the Damuda to the Saraswati river in the *Hughli* district, by which process a succession of filthy and stagnant pools was converted into a flowing stream, conferring great benefit to the densely populated villages on the banks of the Kana Nuddi. Some reservoirs for the storage of water were constructed in different parts of the *Sonthal Pergunnahs* district. The reports, moreover, show that tanks and wells were constructed in the following districts. Those provided by private individuals are distinguished from the others.

Districts.	Localities.	Number of Tanks or Wells.	Cost.	Names of the Private Individuals at whose cost they were constructed.
			Rs.	
Burdwan	In different places	Tanks and wells, number not stated.	Not stated	By private individuals, names not furnished.
Hughli	Belkuli in Singur thanah	1 tank	1,023	....
	Ditto ditto ...	1 do. re-dug	700	Ditto ditto ditto.
	Serampore sub-division	4 tanks excavated ...	917	Lokenath Dass, Luckhinarain Nundy, Kirtibash Kodaley, and Gyaram Sircar, one each.
	Satgong in Hughli thanah ...	1 tank ditto ...	1,100	Nittya Nundo Dass.
Murshidabad ...	Ward Cossimbazar in Berhampore town.	1 do. ditto ...	Not stated	Moharanee Shurnomoyee Dassia, commenced in 1882, completed this year.
	In different places	Some tanks excavated, number not stated.	Ditto	Some zemindars and others, names not furnished.
Rajshahye ...	Ditto	Several ditto ditto ...	Ditto	Private individuals, names not furnished.
Pubna	Jamutor in Shazadpore Station ...	1 tank excavated ...	800	Denobundho Bahaduri, zemindar.
	Tarash	1 ditto ...	700	Shiraj Fakir.
	Nokarshan in Ranigunge station	1 ditto ...	1,150	Tarini Sircar.
Faridpore ...	Not stated	5 tanks excavated ...	1,163	....
	In different places	9 ditto ...	5,650	Parus Nath Ghose, Kali Kumar Sircar, Guru Churn Rudra, Prahlad Tanti, Baul Chandra Bhunaik, Khankar Murundai, Rajkumar Sircar, Bhagiruth Barui and Krishna Churn Jogi, one each.
Backergunge ...	In some villages	Some excavated, number not stated.	Not stated	By rich men, names not furnished.
Mymonsing ...	In Halwa Hati in Jamalpore sub-division.	1 tank excavated ...	1,100	Balya Chundra Shaha.
Monghyr	Monlanagore in Sudder sub-division.	1 ditto ...	4,000	Sha Alamand.
	Bhowanipur in Sudder sub-division.	1 ditto ...	1,000	Behari Kurmi.
	Sudder sub-division	1 ditto ...	500	Mohunt Sawah Ram.
Bhagulpore ...	Ditto ditto	15 wells sunk ...	Not stated	....
Maldah	Old Muldah town	1 tank improved ..	1,100	Tulshi Ram Shah.
Sonthal Pergunnahs	Mohigunge, sub-division Jamtarah.	1 tank excavated ...	Not stated	Mr. Smith, Ballast Inspector.
Poori	Mouzah Shibchandrapur in Bhanpur.	1 ditto ...	500	....
	Mouzah Balchadrapur	1 ditto ...	300	. . . . . .
	Kachrakoili	1 ditto ...	500	Masmat Rabbi.
	Agarpara	1 ditto ...	165	Bangshi Patti.

DISPOSAL OF THE DEAD.

In Towns.

Burning-ghâts were provided in the *Barripore* and *Baranagore* towns in the 24-Pergunnahs: an incinerator for dead animals and slaughter-house offal was constructed in the *Darjiling* Municipality; land was purchased for burning and burying grounds in *Kandi* town in Murshidabad; a cart was provided for conveying corpses in *Meherpur* town in Nuddea; and enclosure walls to the burning-ghâts were constructed in the *Howrah* Municipality.

MARKETS AND SLAUGHTER-HOUSES.

In Towns.

Markets.

In the *Darjiling* town a meat shop was constructed in the Bhootea busti, and the meat market at the old slaughter-house was extended. A Municipal market was constructed in *Madhubuni* in Durbhanga, The Municipal market in *Monghyr* town was arched and walled. A butcher's shop was constructed in the *Hazaribagh* Municipality. In the *Purulia* town in Manbhum, a shed in the market, a butcher's shop also in the market, and a gola for storing rice were constructed.

Slaughter-houses.

In the *Darjiling* Municipality two slaughter-houses, one in the Bhootea busti and the other for sheep, were constructed. Two slaughter-houses with pits around them were constructed in the *Bhagulpur* town. Slaughter-houses were provided in *Arrah* in Shahabad, in *Hazaribagh*, and in *Purulia* in Manbhum.

PROTECTION TO TRAVELLERS.

In Towns.

A long range of rooms for travellers was provided in *Berhampore* town by Maharanee Shurnomoyee Dassia; a serai was built in the *Bettiah* town; and a pucca shelter-house for the Hindus was constructed in the *Cuttack* Municipality.

MEDICAL RELIEF.

In Towns.

A mortuary, or dead-house, was provided in the *Howrah* Municipality. The *Barripore* charitable dispensary was in course of construction. In *Darjiling* the Eden Sanitarium was opened for the reception of patients in April 1883, and the charitable and small-pox hospitals were roofed with corrugated iron. In the *Kurseong* town a temporary shed for small-pox patients was constructed, and a partition wall put up in the dispensary. In the *Madaripore* town in Faridpore a cholera-shed and a dispensary-shed were constructed. In *Purulia* in Manbhum a contagious disease hospital was built.

In Districts.

In *Monghyr* a dispensary was constructed in Jamui, and the dispensary at Jamalpore, the gift of Mr. Dear, referred to in the last year's Report, was completed and occupied this year. It cost Rs. 31,000. A hospital at Ulipore in Rungpore was provided by Maharanee Shurnomoyee Dassia.

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 28*th April* 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. IV.

ABSTRACTS OF INSPECTION REPORTS ON TOWNS VISITED IN 1883.

Abstracts of Inspection Reports on Towns visited in 1883.

Howrah.—*Inspected in January.*—On the whole this town is in a creditable condition, and there is ample evidence to indicate that its sanitary welfare engages the keen interest of the Commissioners, their chief attention being directed to the important matters of bustee improvement, water-supply, drainage, and conservancy, notably house scavenging from which source alone an income of Rs. 60,947 was derived in 1882.

Suggestions offered:—(1) To extend the house scavenging service, so that it may cover the whole town. (2) To provide a water-service for the municipal slaughter-house. (3) Till the scheme for supplying filtered water to the town is brought into operation, to keep strictly free from pollution the reserved tanks and the river, and to induce the people to keep their private wells and tanks, which are more or less filthy, in a wholesome condition. (4) To improve registration in the manner indicated, and to utilize fully the provisions of the Compulsory Registration Act.

Action taken on the suggestions.—It was reported that the question of providing a water-service for the slaughter-house would be taken into consideration when the budget estimates of the ensuing year were to be prepared.

Serampore.—*Inspected in February.*—Great and commendable attention is directed by the Commissioners to the sanitary condition of this Municipality, of which the many improvements which have been, or were about to be effected, bear convincing testimony.

The suggestions were:—(1) To fill up the unusually large number of filthy excavations in wards Serampore and Rishra. (2) To take into consideration the bringing into operation of sections 257 to 266 of the Municipal Act relating to building regulations. (3) To metal those roads which have not received this attention. (4) To provide more public latrines. (5) To extend the Latrine Act to the remainder of the Municipality where there are private privies in a very filthy and objectionable condition. (6) To improve the water-supply arrangements. (7) To suppress the practice of interments within the enclosures of houses. (8) To improve registration, and to fully utilize the provisions of the Compulsory Registration Act.

Action taken on the suggestions.—It was resolved to fill up the excavations and dirty coss-pools as far as practicable; to metal the kutcha roads as far as funds will allow; and to stop the practice of burying the dead within the enclosures of houses as far as possible. The Commissioners were of opinion that it would be a great hardship to the people if sections 257 to 266 of the Municipal Act were brought into operation; they were in communication with the Government about the arrangements for supplying filtered water to the town; and they considered that there was no necessity to introduce the Latrine Act to the Rishra ward, or to the Mohes ward pending the fulfilment of the promise made by the owner of the bustee in this ward to put up public latrines.

Buxar.—*Inspected in March.*—The condition of this town was anything but satisfactory, serious defects existing almost under every head of sanitation.

The recommendations were:—(1) To enforce with greater activity the sanitary clauses of the Municipal Act. (2) To remove the long chabootras, unnecessary steps and projecting buildings across the drains, and to prevent all such encroachments in future. (3) To provide a proper system of drainage. (4) To remedy the overcrowding of houses, which at present obtains, on the occasion of fires. (5) To strengthen the existing insufficient establishment. (6) To provide additional latrines, as the present number covers only half the town, necessitating the people to resort for defæcation anywhere and everywhere. (7) Prior to carrying out the suggestion 6, to give a trial to Major Ramsay's Patent Portable Latrine. (8) To provide the cutcherry and markets with latrines. (9) To suppress the many objectionable well-privies. (10) To place the private privies, which are in a filthy condition, under municipal supervision. (11) To prohibit the practice of the people keeping outside their houses large earthen pots containing washings and sweepings, which rot in the sun. (12) To prevent the accumulation of cattle and human ordure in Saniputty, which is said to be notoriously the most unhealthy quarter of the town. (13) To efficiently protect the drinking water-supply from the many pollutions to which it is subject. (14) To peremptorily stop the practice of throwing the pauper dead into the river, making provision for their interment or cremation. (15) To carry out the proposal to introduce the Compulsory Vaccination Act. (16) To improve registration, and to fully utilize the provisions of the Compulsory Registration Act.

Action taken on the suggestions.—The following is the substance of the reply furnished. The Municipal Commissioners were utilizing the amount hitherto paid for the Police in carrying out sanitary works. They had expended Rs. 526 in constructing a drain, and had budgetted Rs. 500 for sinking a well. Want of a preventive establishment precluded the full utilization of the sanitary clauses of the Municipal Act, but steps will be taken to enforce them. The kutcha drains in front of houses are being kept clean, pending their conversion into pucca ones, which is a question of funds. One cart has been added, but there are no funds for more. It is intended to provide latrines later on when savings become available. The accumulation of rotting washings, sweepings, and vegetable debris will be

prohibited. The conservancy staff is being gradually increased. It is under contemplation to adopt the Portable Latrine. The people prefer the river water, but it is proposed to thoroughly clean the public wells and to re-excavate the large tank at Saniputty.

Arrah.—*Inspected in April.*—There is evidence to indicate that the sanitary condition of this town is receiving attention. It appeared, on the whole, to be a well kept one, and its people to be healthy and well-to-do. Nevertheless, there were many defects, referable to conservancy and drainage arrangements, which still required rectification. Some portions of the town are confessedly unhealthy, their insalubrity depending upon some of the most rudimentary sanitary wants. The villages of Dharar, Aneath and Puckree, and mohullas Melki and Aboorpool are amongst the number, whose unhealthiness is ascribed to obstructed drainage, contamination of the water-supply, dampness of the soil, and to the houses being constructed on low and confined situations.

The suggestions were:—(1) To consider whether the present low rate of taxation is compatible with the proper execution of necessary sanitary works on which the welfare of the town depends. (2) To utilize the provisions of the Latrine Act, as the numerous well-privies in the town indicate the necessity of their suppression, which cannot be effectually enforced without legal interference. (3) To give early effect to the proposal to substitute pucca drains for the existing kutcha ones. (4) To give effect to the proposition of providing more public latrines, as the present number meets the requirements of only half the town, the consequence being that the fields, ditches and vacant plots of ground are resorted to for defæcation by the poor. (5) Before carrying out suggestion 4, to consider the advisability of adopting Major Ramsay's Portable Privy. (6) To tar the drains of the public latrines. (7) To remove sweepings, refuse, solid and fluid, and the middens from the lanes and outlying portions of the Municipality. (8) To prevent the throwing of night-soil into convenient ditches and nullahs. (9) To provide additional carts for this purpose, as the present 10 carts are manifestly insufficient to remove the deposits of over 43,000 people. (10) To suppress the well-privies, which still exist to a large extent. (11) To see that those well-privies which are said to have been demolished, are properly filled up with earth and permanently closed, as some of them were ascertained by the Civil Surgeon to have been merely covered over with planks, and afterwards opened, from time to time, for the reception of night-soil and sweepings. (12) To induce the owners of the private markets to keep them in a clean condition, to have their floors paved, and to provide them with drains and latrines. (13) To remove the brick and lime kilns beyond municipal limits. (14) To prevent the re-entry of foul water into some of the public wells, and to protect the drinking water tanks from pollution. (15) To reserve some wells for drinking purposes, their conservancy being carefully attended to. (16) To undertake the disposal of the contagious disease dead. (17) To introduce the Compulsory Vaccination Act. (18) To improve registration, and to utilize fully the provisions of the Compulsory Registration Act.

Patna.—*Inspected in April.*—The condition of this town, although not quite satisfactory, is in several respects superior to that of most large towns in Bengal Defects exist particularly under the heads of conservancy, drainage and water-supply. For the first of these much has been done, and it will be further considerably improved, now that the Commissioners have, after prolonged deliberation and much conflict of opinion, again brought into operation the Latrine Act. At least two great evils will, it is hoped, vanish under this measure, viz., the many extremely filthy, pestiferous private privies, and the abominable sundasses or well-privies. The water in the wells, which are in very many cases situated in close proximity to these sundasses, will also no doubt benefit by their suppression; but the sub-soil of Patna must have become so saturated with polluting matters from the insanitary practices of generations, that it is very doubtful whether any single well now existing, or hereafter to be sunk within the limits of the town, could be depended upon for even a moderately pure drinking supply.

The suggestions were:—(1) To persevere in and bring to completion the work (in hand) of converting the kutcha, improperly levelled, and filthy drains into pucca saucer-shaped ones, and to give early effect to the proposed general drainage scheme, particularly as now the Municipality is effecting a saving of over Rs. 25,000 per annum, by having been relieved of the cost of Police establishment. (2) To carry out the proposition to provide additional public latrines and trenching grounds, and to supply wheel-barrows for the conservancy of the bye-lanes. (3) To bury the night-soil in shallow instead of deep trenches, and to cultivate the trenching grounds. (4) To give early attention to the contemplated provision of additional market sheds, as the existing one is insufficient for the requirements of the people, owing to the unusual length of the town not admitting of one market being generally resorted to. (5) To provide one or more slaughter-houses, and to levy a fee on each head of cattle slaughtered therein, in order to do away with the private slaughtering places, which are in a filthy condition with the offal, &c., buried or hidden in holes in their proximity. (6) To adopt stringent measures for the protection of the river, which is the chief source of the drinking supply, from pollution, by the entry of fluid refuse from the houses and workshops situated on and close to its banks, particularly as the wells are, as before stated, highly contaminated with polluting matters, and as amongst thickly populated communities, like those in Patna, it is almost impossible to maintain tanks (which are to some extent used here) within such a degree of purity as shall render them fit for drinking purposes. (7) To use every endeavour to close gradually the Mahomedan burying places called

mugberahs, which amount here to 523, most of which are situated within the enclosures of private houses. (8) To provide, as a first step towards this end, general burial-grounds in appropriate localities, the Mahomedan community, who number strongly in this city, being asked to meet a portion of the cost. (9) To improve registration, and to utilize fully the provisions of the Compulsory Registration Act.

Action taken on the suggestions.—It was reported that most of the suggestions have been attended to, and that the rest will receive attention as funds and circumstances will permit.

Darjiling.—*Inspected in November.*—The sanitation of this town receives a fair share of the attention of the Commissioners, who have rectified several of the insanitary conditions met with at the inspection in October 1882. But much more might be done for the improvement of this sanitarium. There ought to be no difficulty in doing this, as the income accruing to the Municipality is a large one, and as the major portion of the large amount hitherto paid for Police establishment, of which the Municipality has been relieved, is now available for sanitary purposes.

The suggestions were :—(1) To consider the advisability of providing a general drainage scheme, as stone drains, however admirably they answer the purpose where only rainfall has to be carried off, become more or less offensive in dry weather, when house drainage, however apparently inocuous, finds its way into them, as is the case in the bazars; and as it is feared that the earth under them becomes in course of time saturated with matter inimical to health. (2) To prohibit the employment of the municipal mehters on private work, and to consider the necessity of increasing the conservancy establishment, which is found to be too weak for the work of the station. (3) To undertake the cleansing of the private latrines under the Latrine Act, as great difficulty is at present experienced in obtaining access to them, and they are in a most unsatisfactory condition, particularly in the Darjiling bazar. (4) To improve the sanitary condition of the Bhootea bustee, Tumsang, Jore bungalow, Gumpahar and Singmari, which are considered the most unhealthy localities, owing, among other reasons, to the dirty habits of the people, who defœcate everywhere, and will not use public latrines. (5) To give effect to the proposal to introduce the Compulsory Vaccination Act. (6) To improve registration, and to utilize fully the provisions of the Compulsory Registration Act.

Julpaiguri.—*Inspected in December by Dr. Wood, Deputy Sanitary Commissioner, Darjiling Circle.*—The sanitary defects in this town are of a grave character, and the great drawback to rectifying them is want of funds, the income being small. It is hoped, however, that now that it has been relieved of Police charges, a portion of this saving will be employed in this direction. The most prominent defects are bad and obstructed drainage, unsatisfactory conservancy, and bad water-supply.

The recommendations were :—(1) To correct the defects in the metalling of some of the roads. (2) To remove or thin the bamboo clumps, uproot the jungle, and lop off the overhanging branches of trees which surround the union, particularly about Nyabusti and Telipara, which, with crowded houses, give these villages the reputation of being most unhealthy. (3) To remove existing encroachments over the drains, and to prohibit future encroachments. (4) When funds are available, to provide a system of pucca drains. (5) To dispose of the street sweepings and rubbish completely and properly. (6) To provide more public latrines, particularly one near the dâk bungalow and one near the jail. (7) To keep the public latrines in a scrupulously clean and wholesome condition. (8) As funds are not at present available to carry out the two immediately foregoing suggestions, to mark out certain plots of waste land beyond union limits for the people to resort to for defœcation, and to appoint a sweeper or two to cut trenches and cover in the night-soil. (9) To tar the floors and drains of the latrines, as well as the receptacles for night-soil. (10) To use dry earth in all the latrines. (11) To prohibit the union mehters to perform private work. (12) To pay better and more complete attention to the private latrines. (13) To bury the night-soil in a more systematic manner, and to provide additional conveniently situated ground for trenching night-soil. (14) To increase the strength of the establishment and the number of the carts, so that the conservancy and latrine arrangements may be more efficiently attended to. (15) To suppress the well-privies, inducing the owners to provide in their place properly constructed surface privies. (16) To cause the owner of the Din Bazar market to keep it in good order and improve it. (17) To protect the river Kurla, which forms the chief source of water-supply for the natives, from the many pollutions to which it is subject. (18) To adopt steps for the introduction of the Compulsory Vaccination Act. (19) To improve registration, and to utilize fully the provisions of the Compulsory Registration Act.

Action taken on the suggestions.—The report received shows, (1) that the thinning of bamboos lopping trees and uprooting jungle cannot be undertaken, as by this procedure private property would be interfered with, and there is no law authorizing such interference, and that, moreover, the people object to the measure, particularly with regard to bamboos, which is valuable property; (2) that the drainage defects will be attended to when funds become available; (3) that the drawbacks to improving the conservancy are want of legal authority to enforce orders (the sanitary clauses of the Municipal Act not being in force, as this town is a union), and the apathy of the lower classes with regard to sanitary matters; (4) that an attempt to induce the people to resort to public latrines on the payment of one anna a head, or to have private privies of their own, was met by the submission of a petition, numerously signed, to the Commissioner, stating that a latrine tax was being imposed upon

them, and that they preferred the fields to public latrines, and that when they found that it was optional with them to use public latrines or not, they almost all forsook the latter for the former; (5) that better success attended this effort among the respectable classes, as 140 of their privies were placed under union supervision; (6) that a latrine would soon be constructed for the dâk bungalow; (7) that the water of the Kurla river is not drank, and that its banks are cleaner than they used to be; and (8) that it is difficult to improve registration under the present organization, as any pressure on the chowkidars would result in fictitious returns.

Sherpur.—*Inspected in December by Dr. Wood, Deputy Sanitary Commissioner, Darjiling Circle.*—The condition of this town is very unsatisfactory, grave defects, calling for urgent reform, existing under every head of sanitation. Most of the houses wear a tumble down appearance, and there are upstanding ruins to be met with in many gardens. Tigers infest the southern portion of the town, which appears, in fact, to be in a state of decay.

The recommendations were:—(1) To devote a larger share of the income than at present to sanitation, and to utilize for the same purpose the amount hitherto expended for Police establishment of which the town has been relieved. (2) To administer the sanitary clauses of the Municipal Act with activity and closeness, to frame and introduce a Code of bye-laws under this Act, and to bring into operation certain omitted sections of the same Act bearing on sanitary matters. (3) To metal the roads, as none of them have been so treated. (4) To fill up the large and deep excavations about the town. (5) To widen the roads, all of which, excepting the main one, are narrow, by taking advantage of fires. (6) To cause the people to keep their compounds in a clean condition and to uproot the jungle. (7) To devise and bring into effect a proper system of drainage, and, in the meanwhile, to keep in proper working order the existing drains, which are mere unlevelled kutcha channels, some too deep, others too shallow, and all more or less obstructed with filth, sweepings, decaying vegetation, &c., and encroached upon by projections, &c. (8) To utilize the street sweepings in filling up excavations instead of heaping them up with the view of eventually burning them. (9) To demolish the four existing latrines, which are faulty in construction and useless in other ways. (10) To employ Major Ramsay's Portable Land Manuring Privies, or, if the introduction of these is found impracticable, to provide properly constructed privies, the conservancy of which it will not be difficult to attend to, and to increase the number of these conveniences, as the existing number affects less than half the town, and necessitates most of the people to defœcate anywhere and everywhere. (11) To tar periodically the floors, and walls up to three feet high, of the latrines as well as the fœcal gumlows. (12) To use dry earth in the latrines. (13) To cause the mehters to clean the latrines twice a day, instead of once as at present. (14) To do away with the urinals which are simply nuisances. (15) To suppress the abominable sundasses or well-privies, and to induce the owners to supply in their place properly constructed and well conserved surface privies. (16) To have the private privies cleaned by municipal mehters under municipal supervision. (17) To adopt the Monghyr plan of trenching night-soil, providing sufficient ground for the purpose. (18) To do away with the middens. (19) To cause the owners of the two market places to provide them with latrines. (20) To remove, beyond municipal limits, the lime kilns and the tanneries. (21) To select tanks in different parts of the town, clean them out, reserve them exclusively for drinking purposes, and effectually protect them from pollution of every kind. (22) To repair the public wells, providing them with drainage channels for leading the spill water to the nearest drain. (23) To establish ghâts for takiñg drinking water from, and for bathing and washing, apart from one another. (24) To protect the river from being polluted by sewage from the drains, by being resorted to for defœcation, &c. (25) To provide a burial-ground for the Mahomedans, and prohibit them from burying their dead near their houses. (26) To see that graves are dug seven feet deep and not four and a half feet, as the Mahomedan system of roofing the vault, in which the body is buried, needs this depth. (27) To cause the pauper contagious disease and lunatic dead to be cremated instead of being thrown into the river. (28) To treat the carcasses of animals similarly, instead of throwing them about the town, or into holes, to be devoured by dogs, vultures, &c. (29) To utilize fully the provisions of the Compulsory Registration Act.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 28th April 1884.

APPENDIX No. V.

REPORT SHOWING THE RESULTS OF THE ESTABLISHMENT OF BOVINE VACCINATION IN CALCUTTA IN 1883-84.

Second Report on Animal Vaccination in Calcutta for 1883-84, by Dr. K. P. Gupta, Superintendent of Vaccination, Metropolitan Circles.

Area and amount of work.

WORK was carried on in the Central Depôt at No. 85, Wellesley Street, and also at the Medical College Hospital, Municipal Office Vaccine Depôts in the town, and at the houses of private applicants both in Town and Suburbs. From April to December last calves were regularly sent to the above mentioned Depôts. In January the number of applicants at the Central Depôt began to increase, and the vaccinated calf was kept there from 7 to 9 A.M. to vaccinate them, and after that hour it was sent out either to the College Hospital, or to the houses of private residents. In February and March the demand for calf lymph both at the Central Depôt and outside became so great that it taxed all our resources to meet it.

The morning after the publication of Dr. McLeod's letter, warning the residents of Calcutta to get themselves vaccinated, some two hundred ladies and gentlemen presented themselves at the Depôt, and ever since numbers, varying from 50 to 100, have been coming every morning. The Deputy Superintendent in charge of Animal Vaccination worked hard, and vaccinated every applicant, specially ladies, with his own hands. After the Depôt work was over, the vaccinated calf was sent to the houses of private applicants, and it sometimes so happened it was out the whole day. A glance at the register of cases done at the Depôt and outside will show that calf vaccination has been very much appreciated and welcomed by all classes of Europeans and East Indians. From the Chief Justice and the Judges of the High Court and Secretaries to the Government of Bengal down to poor clerks and shopkeepers and petty traders, mercantile firms, banks and offices, have been vaccinated *en masse*. The primary vaccinations are shown in the following table.

	PRIMARY VACCINATION.					RE-VACCINATION.					GRAND TOTAL.				
	Total number vaccinated.	RESULT.				Total number vaccinated.	RESULT.				Total number vaccinated.	RESULT.			
		Successfully vaccinated.	Failed.	Not ascertained.	Total.		Successfully vaccinated.	Failed.	Not ascertained.	Total.		Successfully vaccinated.	Failed.	Not ascertained.	TOTAL.
CALCUTTA. Central Depôt ...	547	491	12	44	547	2,349	1,103	410	836	2,349	2,896	1,594	422	880	2,896
CALCUTTA. Medical College	277	256	20	1	277	...	...	...	...	...	277	256	20	1	277
CALCUTTA. Municipal Office	101	97	2	2	101	36	29	7	...	36	137	126	9	2	137
Suburbs of Calcutta ...	145	134	...	11	145	...	...	...	...	...	145	134	...	11	145
Districts	223	140	...	83	223	...	...	...	...	...	223	140	...	83	223
TOTAL ...	1,293	1,118	34	141	1,293	2,385	1,132	417	836	2,385	3,678	2,250	451	977	3,678

Wherever lymph direct from the calf was used, success was certain: so with good lymph in tubes and used by skilful operators. In cases of failure the causes of non-success were the mixture of serum, blood, and other impurities. In such the lymph is generally coagulated and comes out like a thread from the tube. The work of animal vaccination has interfered with the Municipal vaccinations in town. It has reduced their number much, but when people prefer bovine lymph to the humanised virus, it is nothing but right that there should be a Depôt for animal vaccination in Calcutta. One hundred and fifty-six calves were vaccinated from the very commencement in January 1883. It was, therefore, the 156th transmission up to 31st March.

Causes of Success and Non-success.

The percentage of success in re-vaccinations is very high. Some doubtful cases have been entered as successful. The gentlemen who were re-vaccinated returned their cases as successful when it is to be presumed that they were only doubtful. The percentage given is therefore not quite correct. Again, in many cases the results could not be ascertained, as the persons either left Calcutta or never took the trouble to send them.

Comparative value of Bovine and Humanised virus.

That the bovine lymph seems more potent appears from the following facts. The fever is stronger, and sets in earlier. The swellings and irritation of the lymphatic glands are always greater, and sometimes where humanised virus had failed bovine lymph has succeeded.

(*a*.) A gentleman who had a mild attack of small-pox several times got himself vaccinated with humanised virus without success. This year he was vaccinated with bovine lymph, and it proved successful.

(*b*.) Persons who have had small-pox and bear distinct and numerous pittings, have been successfully vaccinated with bovine lymph.

(*c*.) In the district the inspectors and vaccinators remarked that the virus was stronger, and never degenerated and died out as in former years.

(*d.*) In persons who were inoculated during childhood the bovine lymph has been successful, as I can testify from my personal experience. I was inoculated when a child and had a modified attack of small-pox in 1859 I got myself vaccinated with bovine lymph which has taken very well; but I do not consider it necessary in all cases. I did the experiment on my own person purposely. I don't think that persons who were inoculated and who had had small-pox also need be vaccinated.

(*e*) In re-vaccination cases with calf-lymph, the percentage of success is much higher than with humanised virus

(*f.*) Bovine lymph possesses another great advantage over humanised virus, *i.e*, we always have a plentiful supply whereby we can meet any sudden demand. Whenever reports of small-pox were received from the districts or tea gardens, supplies of bovine lymph were promptly sent, which could not be done with humanised virus.

There are certain facts in connection with animal vaccination that deserve particular mention. That it has been a great boon conferred on the public is beyond all question. The demands for lymph have been so great and urgent at times that it would have been simply impossible to meet them with humanised lymph I shall here mention certain facts which will prove the necessity of having a permanent depôt for animal vaccination in Calcutta.

(1.) A case of small pox was detected at Little Russel Street, on the evening of 9th March 1884. At 10 o'clock at night a letter reached the office stating that all the occupants were ready to pay anything if they could get themselves vaccinated that very night. The calf was accordingly sent, and the whole household were vaccinated at 11 o'clock that night.

(2.) A case of small-pox was detected on the *Resolute* lying at Diamond Harbour. The marine authorities deemed it necessary that the whole crew should be vaccinated as soon as possible. Intimation was given to this office on the evening of 24th March, and the next morning a calf and vaccinators were sent there, and the whole crew were vaccinated.

(3.) Surgeon-Major G. P. Mackenzie intimated to this office that he wanted the whole of the 4th Native Infantry to be vaccinated at once. The next day a calf was sent, and the whole regiment was vaccinated.

(4.) In Mercantile firms, Government offices, and schools, hundreds were vaccinated within a few hours' notice.

(5.) At times candidates for vaccination at the depôt have been more than a hundred between 7 and 9 in the morning. It would have been impossible to meet this demand with humanised virus.

(6.) Besides so many cases of vaccination every day in the depôt and in the town, 150 tubes of fresh lymph were regularly supplied every week to the Sanitary Commissioner.

(7.) The difficulty of establishing virus and carrying the same from place to place has this year been completely removed since tubes were supplied to all the inspectors and vaccinators belonging to the Metropolitan Circles, which enabled them to establish virus wherever required. So virtually there has been no expense for establishing virus in the different districts and villages of Bengal

These facts prove beyond doubt the necessity of having a permanent depôt for animal vaccination in Calcutta. That it has been quite a success is now fully demonstrated. With such an epidemic of small-pox and consequent panic as that through which Calcutta is just passing, we could never have safely tided over it. Small-pox has not raged, and the disease has been kept in check. There have been few cases among Europeans who took the warning in time and got themselves vaccinated.

Cost.

The total expenditure last year was Rs. 3,975-2-2, and dividing this by the number of vaccinations and re-vaccinations, *i.e.*, 3,678, the cost of each case comes to Rs. 1-1-3. The cost would be less if we got all the numbers done. But the number vaccinated does not represent all the work done by the establishment. Lymph stored in Dr Husband's capillary tubes has been supplied to all parts of the country. In the districts and circles the initial expense of raising lymph was saved by the use of calf-lymph.

While on the question of cost I would beg to suggest for the consideration of Government the following proposal, viz. that a fee of eight annas be charged for each vaccination done in the houses of private residents. This year about 1,352 cases were done in private houses, firms, and banks: we could have realised Rs. 676. It is but right that a small fee should be charged to those who wish to be vaccinated at home. The Compulsory Act provides a fee for "home vaccition," and I don't see any reason for offering gratuitous vaccination with calf lymph while we charge fees for vaccinating with humanised virus, and thereby putting the latter under a disadvantage.

In conclusion, it should be stated that the statement of primary and secondary vaccinations does not show every case done. Several gentlemen who came and got themselves vaccinated in the Central Depôt went away in hurry without entering or giving their names and particulars, and there was no time to ask them, as the pressure and crowding was great. Then again the Medical Officer of the 4th Native Infantry has not favoured this office with the names of the sepoys and camp followers, together with their children, who were vaccinated in their lines on three different occasions with calf lymph.

OFFICE OF THE SANY. COMMR FOR BENGAL,
The 24th May 1884.

R. LIDDERDALE, M. D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. VI.

STATEMENTS EXHIBITING PARTICULARS REGARDING THE VACCINE OPERATIONS OF THE YEAR 1883-84 AND OTHER INFORMATION CONNECTED THEREWITH.

STATEMENT No. I.—*Showing particulars of Vaccination*

Number.	Circles and Districts.	Population according to Census of 1881.	Average population per square mile.	Average number of Vaccinators employed throughout the season.	Total Number of Persons Vaccinated. Males.	Females.	Total.	Average number of persons vaccinated by each Vaccinator.	Primary Vaccination. Total. Males.	Females.	Total.	Successful. Under 1 year.	1 year and under 6.
1	2	3	4	5	6			7	8			9	10
	Calcutta Circle of Superintendence.												
1	Calcutta	433,219	54,152	11	5,572	3,966	9,538	867	4,629	3,728	8,357	2,591	4,574
	Metropolitan Circle of Superintendence.												
1	Burdwan ... By licensed vaccinators.	1,334,197	499	37	17,576	16,732	34,308	927	17,559	16,725	34,284	3,180	22,441
2	Bankura ... By licensed vaccinators.	909,010	388	34	10,739	10,126	20,865	607	10,739	10,126	20,865	2,008	14,237
3	Birbhum ... By licensed vaccinators.	796,590	448	20	7,897	7,685	15,582	779	7,894	7,682	15,570	1,067	9,774
4	Midnapore ... By licensed vaccinators.	2,283,541	487	44	16,583	15,065	31,648	719	16,580	15,063	31,643	4,312	18,632
5	Hugli ... By licensed vaccinators.	985,748	729	25	9,825	9,528	19,353	774	9,809	9,515	19,324	1,769	13,672
6	Howrah ... By licensed vaccinators.	529,753	1,139	11	9,018	8,591	17,609	1,600	9,017	8,591	17,608	2,764	12,773
7	24-Pergunnahs ... By licensed vaccinators.	1,444,648	720	20	19,218	18,050	37,268	1,133	19,218	18,050	37,268	8,919	28,158
8	Nuddea ... By licensed vaccinators.	1,297,525	564	39	26,388	24,208	50,596	1,297	26,383	24,206	50,589	4,823	36,011
9	Jessore ... By licensed vaccinators.	1,889,015	660	41	20,343	18,730	39,073	953	20,315	18,728	39,063	3,316	28,888
10	Khulna ... By licensed vaccinators.	1,079,948	520	34	15,248	14,332	29,580	870	15,244	14,331	29,575	2,617	17,436
11	Murshidabad ... By licensed vaccinators.	1,105,724	524	31	24,110	22,551	46,661	1,503	24,108	22,549	46,657	3,324	30,814
	Total ...	13,585,759	552	342	170,945	165,598	342,543	1,001	176,886	165,566	342,452	33,101	233,726
12	Suburbs of Calcutta, including Cooly Depôts ...	251,439	10,012	10	8,515	5,882	14,397	1,439	5,610	4,420	10,030	1,484	6,785
	TOTAL OF METROPOLITAN CIRCLES ...	13,837,198	561	352	185,460	171,480	356,940	1,014	182,496	169,986	352,482	34,585	240,511
	Darjiling Circle of Superintendence.												
1	Dinagepore ... By licensed vaccinators ..	1,501,796	365	32	18,077	16,504	34,581	1,080	18,077	16,504	34,581	5,623	23,070
2	Maldah .. By licensed ditto	698,018	369	21	9,014	8,225	17,239	820	9,014	8,225	17,239	7,123	8,680
3	Rajshahye .. By licensed ditto ..	1,318,847	560	28	19,179	18,360	37,539	1,340	19,178	18,359	37,537	8,074	20,045
4	Rungpore ... By licensed ditto .	2,084,614	599	32	23,121	20,708	43,829	1,369	23,121	20,708	43,829	5,726	33,042
5	Bogra ... By licensed ditto .	721,212	484	17	9,344	9,093	18,437	1,084	9,344	9,093	18,437	3,814	14,224
6	Darjiling ... By paid ditto ..	148,161	121	5	7,709	6,343	14,112	2,828	7,709	6,343	14,142	1,753	5,036
	By licensed ditto ...			2	1,226	1,153	2,379	1,189	1,226	1,153	2,379	549	1,252
7	Julpaiguri ... By licensed ditto .	581,562	204	21	8,899	7,954	16,853	802	8,897	7,951	16,848	6,014	9,358
8	Purneah ... By licensed ditto	1,833,671	373	31	19,180	17,357	36,537	1,178	19,180	17,357	36,537	9,801	24,047
	Total ... By paid ditto ..	8,890,901	398	5	7,709	6,343	14,112	2,828	7,709	6,343	14,142	1,753	5,035
	By licensed ditto ..			184	108,040	99,354	207,394	1,127	108,037	99,350	207,387	46,784	143,917
	TOTAL OF DARJILING CIRCLES .			189	115,839	105,697	221,536	1,172	115,836	105,693	221,529	48,537	148,952
	Ranchi Circle of Superintendence.												
1	Manbhum .. By licensed vaccinators .	926,655	202	Paid ... 39; Licensed ... 183	16,846	15,919	32,765	Paid ... 951; Licensed ... 596	16,737	15,867	32,604	9,468	10,218
2	Singhbhum ... By paid ditto ..	555,958	148		2,961	2,908	5,872		2,961	2,908	5,872	744	3,005
	By licensed ditto ...				9,943	9,090	19,033		9,145	8,353	17,498	2,116	11,192
3	Hazaribagh . By paid ditto ..	873,789	160		68	78	146		68	78	146	47	32
	By licensed ditto ..				15,400	14,017	29,417		15,390	13,999	29,389	4,994	20,310
4	Lohardugga ... By paid ditto ...	1,138,535	132		15,246	15,854	31,099		15,246	15,853	31,099	11,422	16,990
	By licensed ditto ...				1,404	1,347	2,751		1,404	1,347	2,751	1,293	1,280
5	Political States ... By licensed ditto ..	532,317	10		12,730	12,470	25,200		12,730	12,470	25,200	3,319	16,895
	Total ... By paid ditto ..	4,027,253	116	39	18,278	18,839	37,117	951	18,278	18,839	37,117	12,213	21,017
	By licensed ditto .			183	56,323	52,843	109,166	596	55,406	52,036	107,442	21,180	68,890
	TOTAL OF RANCHI CIRCLE ...			222	74,601	71,682	146,283	659	73,684	70,875	144,559	33,393	89,907
	Sonthal Pergunnahs Circle of Superintendence.												
1	Sonthal Pergunnahs By licensed vaccinators ..	1,568,093	287	56	32,727	32,135	64,862	1,158	32,216	31,629	63,845	7,390	45,687
2	Bhagulpore .. By licensed ditto ...	1,672,117	527	3	799	707	1,506	502	799	707	1,506	252	1,229
	By paid ditto ...			18	2,024	1,841	3,865	214	2,024	1,841	3,865	440	2,850
3	Monghyr ... By paid ditto ...	1,200,666	440	41	18,947	17,805	36,752	896	18,985	17,802	36,757	4,122	28,039
	Total ... By paid ditto ..	4,440,876	390	59	20,971	19,646	40,617	688	20,959	19,643	40,602	4,552	30,889
	By licensed ditto ...			59	33,526	32,842	66,368	1,124	33,015	32,336	65,351	7,052	46,916
	TOTAL OF SONTHAL PERGUNNAHS CIRCLE ..			118	54,497	52,488	106,985	907	53,974	51,979	105,953	12,204	77,805
	Eastern Bengal Circle of Superintendence.												
1	Mymensing ... By paid vaccinators	2,115,074	533	Paid ... 114; Licensed ... 184	4,887	4,261	9,148	Paid ... 1,609; Licensed ... 911	* 4,887	4,261	9,148	497	4,170
	By licensed ditto				25,779	23,893	49,672		25,763	23,881	49,644	4,208	32,471
	By honorary ditto ...				321	231	552		321	231	552	16	299
2	Faridpore By licensed ditto ...	1,623,083	717		13,374	12,807	26,181		13,374	12,807	26,181	2,452	17,398
3	Noakhalli ... By paid ditto ...	53[illegible],378	480		18,454	15,800	34,254		18,444	15,793	34,237	2,030	17,122
	By honorary ditto ..				635	571	1,206		635	571	1,206	146	630
4	Dacca .. By paid ditto .	2,023,628	724		248	236	484		246	233	479	50	271
	By licensed ditto ...				20,379	19,211	39,590		20,379	19,211	39,590	3,443	27,241
5	Tipperah ... By paid ditto ...	1,186,165	621		67,823	66,356	134,179		67,820	66,356	134,176	9,941	79,023
	By honorary ditto ...				5,449	5,153	10,602		5,449	5,153	10,602	765	5,321
6	Backergunge ... By paid ditto ..	538,909	578		2,681	2,686	5,367		2,681	2,686	5,367	127	1,452
	By licensed ditto ...				12	15	27		12	15	27	2	20
7	Pubna ... By licensed ditto ...	1,311,728	710		20,593	19,161	39,754		20,393	19,161	39,754	4,924	30,475
	Total ... By paid ditto ...	9,331,064	629	114	94,093	89,339	183,432	1,609	94,078	89,329	183,407	13,245	91 [illegible]8
	By licensed ditto ...			184	86,542	81,042	167,584	911	86,526	81,030	167,556	15,956	113[illegible]5
	TOTAL OF EASTERN BENGAL CIRCLE ...			298	180,635	170,381	351,016	1,178	180,604	170,359	350,963	29,201	206,793
	Orissa Circle of Superintendence.												
1	Cuttack .. By paid vaccinators	155,335	405	16	468	408	876	1,587	468	408	876	78	626
2	Balasore ... By paid vaccinators	536,266	408		13,418	11,074	24,522		13,886	11,023	24,109	1,446	19,515
3	Poori .. By paid vaccinators	521,246	288	9	10,554	9,072	19,626	2,180	10,5[illegible]	9,072	19,626	750	11,469
4	Moharbhanj ... By paid vaccinators	385,737	91	4	3,834	3,684	7,518	1,878	3,[illegible]	3,684	7,518	223	4,119
	TOTAL OF ORISSA CIRCLE ...	1,598,584	213	29	28,304	24,238	52,542	1,812	28,[illegible]	24,187	52,129	2,506	35,839
	Behar Circle of Superintendence.												
1	Patna ... By paid vaccinators	1,524,078	741	23	10,381	10,351	20,732	901	10,363	10,346	20,709	1,415	17,568
2	Gya .. By paid vaccinators	269,408	704	1	22	21	43	43	22	21	43	1	41
3	Shahabad .. By paid vaccinators	460,929	699	18	2,126	2,129	4,255	236	2,125	2,128	4,253	369	3,365
4	Chumparun ... By paid vaccinators	1,254,049	523	16	7,267	7,330	14,597	912	7,170	7,250	14,420	1,683	10,864
	TOTAL OF BEHAR CIRCLE ...	3,508,484	638	58	19,796	19,831	39,627	683	19,680	19,745	39,425	3,388	31,838
	GRAND TOTAL OF ALL CIRCLES ... By paid vaccinators ...	46,068,479	381	325	203,328	188,084	391,412	1,204	199,275	186,234	385,509	41,710	228,405
	By licensed ditto ...			952	461,376	431,679	893,055	938	459,870	430,318	890,188	124,673	607,304
	Total ...			277	664,704	619,763	1,284,467	1,005	659,145	616,552	1,275,697	166,383	835,709

* The percentages have been calculated

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th May 1884.

in each Circle of Superintendence during the year 1883-84.

...ful. Above 6 years.	...ful. Total at all ages.*	Re-vaccination. Total. Males.	Females.	Total.	Successful. Under 1 year.	1 year and under 6.	Above 6 years.	Total at all ages.	*Percentage of successful cases. Primary.*	Re-vaccination.	Religion of the number vaccinated. Total number vaccinated of— Hindus.	Mahomedans.	Christians.	Other races.	Persons successfully vaccinated per 1,000 of population.	Average annual number of persons successfully vaccinated during previous five years. Number.	Ratio per 1,000 of population.	Average number of deaths from small-pox during previous five years. Number.	Ratio per 1,000 of population.
11	12	13			14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1,140	8,305	943	238	1,181	...	...	191	191	99·37	16·16	5,917	2,748	816	57	19·61	8,690	20·05	500	1·16
8,640	34,267	17	7	24	..	...	2	2	99·95	8·33	28,939	5,367	2	...	29·68	...	...	100	·07
4,551	20,796	...	...	...	...	...	...	...	99·67	...	20,235	629	1	...	21·16	...	...	196	·20
4,704	15,545	3	3	6	1	1	...	5	99·83	83·33	11,543	3,362	.	677	19·76	...	...	14	·01
8,591	31,535	3	2	5	...	...	1	1	99·65	20·00	29,291	2,357	...	...	[illegible]	...	...	1,212	·53
3,877	19,318	16	13	29	...	1	3	4	99·96	13·79	16,554	2,996	3	...	22·31	...	...	58	·06
2,047	17,584	1	...	1	...	...	1	1	99·86	100·	13,397	4,212	...	...	33·49	...	...	51	·09
5,161	37,233	...	...	...	...	..	...	...	99·99	...	23,765	13,167	336	...	27·77	...	...	74	·05
8,760	50,502	5	2	7	...	3	4	7	99·91	100·	20,618	29,789	182	7	38·01	...	...	93	·07
6,709	35,908	8	2	10	...	1	1	2	99·65	22·22	15,390	23,680	3	...	20·59	...	...	81	·04
9,449	29,512	4	1	5	...	..	3	3	99·79	60·00	16,503	12,990	87	...	27·63	...	...	38	·03
12,452	46,590	2	2	4	...	4	...	4	99·87	100·	22,530	21,131	...	.	42·13	...	...	73	·06
74,963	341,790	59	32	91	1	13	15	29	99·83	32·22	218,565	122,680	614	684	25·46	410,884	36·24	1,990	·14
1,697	9,964	2,905	1,462	4,367	32	174	1,022	1,228	99·74	32·24	10,121	4,141	135	.	44·51	11,291	44·95	297	1·18
76,660	351,754	2,964	1,494	4,458	33	187	1,037	1,257	99·82	32·24	228,686	126,821	749	684	25·51	422,175	39·51	2,287	·16
2,651	34,244	...	...	...	.	...	...	...	99·66	...	14,775	17,864	26	1,916	22·80	...	...	62	·04
1,506	17,209	...	...	...	...	.	...	...	99·87	...	9,588	7,090	..	761	24·65	...	...	91	·13
3,176	37,295	1	1	2	...	..	2	2	99·76	100·	5,587	30,572	...	1,589	28·28	...	...	18	·01
3,801	43,469	...	...	...	...	...	...	...	99·80	...	17,122	26,684	...	1,093	20·85	...	...	693	·33
400	18,437	...	...	...	...	...	...	...	100·	...	2,301	15,780	...	200	25·45	...	...	4	·005
6,676	13,464	...	...	...	...	..	...	...	95·20	...	12,952	...	2	1,188	90·87	...	...	18	·12
476	2,277	...	...	...	...	..	...	...	98·35	...	1,301	231	..	847	15·36				
1,185	16,457	2	3	5	..	4	1	5	99·08	100·	8,544	5,799	6	2,504	28·34	...	...	126	·21
1,730	36,238	...	...	...	...	..	...	...	99·45	.	20,086	13,790	6	2,715	19·76			165	·08
6,676	13,461	...	...	...	...	...	...	...	100·	...	12,952		2	1,188	1·51	160,462	18·74	...	...
14,925	205,626	3	4	7	...	4	3	7	99·66	100·	79,192	116,726	38	11,438	23·13	150,201	16·90	...	...
21,601	219,090	3	4	7	...	4	3	7	99·68	100·	92,144	116,726	40	12,626	24·64	306,953	35·64	1,189	·13
1,195	29,876	109	52	161	...	14	117	131	91·78	83·43	51,029	1,629	28	179	32·34	...	...	49	·05
817	5,556	...	...	...	...	.	...	...	96·55	...	5,812	3	27	...	9·99	...	...	55	·09
2,622	15,939	798	737	1,535	4	190	1,338	1,532	91·90	100·	15,520	27	1	3,485	31·10				
11	90	...	...	...	..	..	...	...	69·76	...	111	6	...	27	·10	...	...	107	·12
1,875	27,169	10	18	28	...	10	18	28	95·11	100·	26,823	2,547	47	...	31·12				
748	29,160	...	...	...	...	...	...	...	95·33	...	29,635	498	575	91	25·61	...	...	591	·51
16	2,589	...	...	...	...	...	...	...	94·97	...	2,553	38	26	131	2·27				
2,237	22,451	...	...	...	...	...	...	...	89·17	...	25,172	28	..	...	12·17	...	...	Not registered.	
1,576	34,806	...	...	...	...	...	...	...	95·43	...	25,588	509	902	118	8·64	46,831	11·62	...	...
7,945	98,015	917	807	1,724	4	214	1,473	1,691	91·79	98·48	101,097	4,169	102	3,798	24·76	90,609	22·50	...	...
9,521	132,821	917	807	1,724	4	214	1,473	1,691	92·72	98·48	136,685	4,678	1,004	3,916	33·10	137,440	34·12	802	·19
10,513	63,500	511	506	1,017	...	20	526	540	99·63	57·17	26,491	4,464	202	33,705	40·30	...	...	124	·79
15	1,506	...	...	...	...	...	...	...	99·27	...	1,317	168	2	21	22·94	...	...	628	·37
557	3,837	...	...	...	...	.	...	...	100·	...	3,099	420	...	356	·90				
4,447	30,608	12	3	15	...	2	2	4	99·77	26·66	28,212	2,106	.	6,171	30·49	...	...	317	·26
5,004	40,445	12	3	15	...	2	2	4	99·73	26·66	31,311	2,536	..	6,770	9·10	62,904	14·16	...	...
10,528	65,096	511	506	1,017	...	20	526	546	99·64	57·17	27,808	4,630	204	33,726	14·78	36,698	6·91	...	...
15,532	105,541	523	509	1,032	...	22	528	550	99·67	56·70	59,119	7,166	204	40,496	23·88	93,602	21·07	1,069	·24
4,807	8,074	...	...	...	...	...	...	...	98·73	...	4,132	4,925	...	91	4·24				
12,795	40,474	16	12	28	3	13	9	25	99·69	...	13,020	36,195	...	457	23·39	...	...	391	·18
283	548	...	...	...	...	...	...	...	99·27	...	215	319	...	18	·25				
6,258	26,109	...	...	...	...	...	...	...	99·79	...	12,505	13,636	10	...	16·08	...	...	202	·17
10,307	34,059	10	7	17	...	1	9	10	99·79	58·82	4,563	29,606	25	...	63·87	...	...	500	·10
427	1,208	...	...	...	...	...	...	...	99·75	...	227	979	...	...	2·25				
187	458	2	3	5	...	...	1	1	95·81	20·00	273	196	...	15	·22	...	...	126	·06
8,908	39,687	...	...	...	...	...	...	...	99·99	...	15,699	23,840	51	...	19·56				
54,123	184,087	3	...	3	...	...	1	1	99·04	33·33	47,709	86,462	8	...	113·04	...	...	250	·21
4,515	10,601	...	...	...	...	...	...	...	99·99	...	4,416	6,186	..	...	8·93				
3,888	5,367	...	...	...	...	...	...	...	100·0	...	4,781	583	...	1	9·95	...	...	118	·21
5	27	...	...	...	...	...	...	...	100·0	...	27	...	...	...	·05				
4,245	39,644	...	...	...	...	...	...	...	99·81	...	9,115	30,639	...	...	30·22	...	...	11	·008
[illegible]	182,945	15	10	25	...	1	11	12	99·84	48·00	61,460	121,832	33	107	19·63	154,066	16·51	...	...
87,376	167,187	16	12	28	3	13	9	25	99·82	89·28	55,224	111,824	61	475	17·91	118,462	12·69	...	...
114,138	350,132	31	22	53	3	14	20	37	99·83	69·81	116,684	233,656	94	582	37·52	272,528	29·20	1,748	·18
145	849	...	...	...	...	...	...	...	96·91	...	835	15	20	...	5·46	...	...	111	·71
3,035	23,996	62	51	113	13	90	10	113	98·45	100·	24,118	74	30	...	41·95	...	...	414	·82
7,316	19,144	...	...	...	...	...	...	...	97·65	...	19,420	156	60	...	36·72	...	...	792	1·51
3,087	7,429	...	...	...	...	...	...	...	98·81	...	7,518	...	...	..	19·26	...	..	Not registered.	
13,583	51,418	62	51	113	13	90	10	113	98·18	100·	52,191	245	106	...	32·23	40,389	25·23	1,347	·84
1,556	20,530	18	5	23	...	7	4	11	99·43	47·82	17,620	3,110	1	1	13·48	...	...	574	·37
1	48	...	...	...	...	...	...	...	100·	...	37	6	...	...	·16	...	...	35	·12
485	4,159	1	1	2	...	...	...	...	100·	...	3,505	650	.	.	9·62	...	..	111	·24
1,651	14,098	97	80	177	...	11	3	14	98·88	8·94	11,573	3,023	1	.	11·25	...	...	374	·29
3,693	38,839	116	86	202	...	18	7	25	98·94	12·66	32,825	6,799	2	1	9·65	13,477	3·64	1,094	·31
110,071	380,186	4,053	1,850	5,903	45	285	1,243	1,573	99·08	29·56	242,365	138,810	1,996	8,211	8·28	504,260	10·94	...	...
145,737	877,714	1,606	1,361	2,867	8	264	2,026	2,298	98·81	82·15	481,886	360,029	1,019	50,121	19·10	800,944	17·39	...	...
255,808	1,257,900	5,659	3,211	8,770	53	549	3,269	3,871	98·89	47·60	724,251	498,839	3,015	58,302	27·38	1,305,204	18·83	10,033	·21

...after deducting the unknown cases.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

STATEMENT No. II.—*Showing the cost of Vaccination in*

Number.	Circles.	Superintendents of Circles.	Deputy Superintendents.	Native Superintendents.	Inspectors of licensed vaccinators.	TOTAL.	Head Vaccinators.	First class Vaccinators.	TOTAL.	Second and third class Vaccinators.	Apprentices.	TOTAL.	Clerks.	Menial servants.	TOTAL.	Pay of establishment.	Travelling allowance.
		ESTABLISHMENT.					Vaccinators.									EXPEN	
1	2	3	4	5			6			7			8			9	10
																Rs. A. P.	Rs. A. P.
1	Calcutta	1	1	...	...	2	3	3	6	8	...	8	...	1	1	4,422 7 0	310 0 0
2 {	Metropolitan Circles ...	1	4	...	39	44	...	...	...	...	...	...	3	6	9	28,796 0 0	7,900 4 0
	Suburbs of Calcutta ...	...	1	...	...	1	3	3	6	7	...	7	...	...	.	3,915 5 4	202 0 0
	TOTAL OF METROPOLITAN CIRCLES.	1	5	...	39	45	3	3	6	7	...	7	3	6	9	32,711 5 4	8,102 4 0
3	Darjiling Circle	1	2	...	11	14	1	5	6	...	...	...	2	4	6	10,094 3 7	3,434 13 1
4	Ranchi "	1	1	2	4	8	1	...	1	39	...	39	1	2	3	12,388 4 3	1,146 11 4
5	Sonthal Pergunnahs Circle.	1	1	...	10	12	3	9	12	50	...	50	1	1	2	7,018 14 7	1,177 10 5
6	Eastern Bengal Circle ...	1	1	1	3	6	6	45	51	32	37	69	2	2	4	12,306 13 3	2,097 14 3
7	Orissa Circle	1	...	...	...	1	3	10	13	16	3	19	1	1	2	4,908 9 10	1,129 4 0
8	Behar "	1	...	2	...	3	4	9	13	32	17	49	1	1	2	6,878 11 8	1,359 1 0
	TOTAL ...	8	11	5	67	91	24	84	108	184	57	241	11	18	29	1,00,329 5 6	18,817 10 1

STATEMENT No. III.—*Showing particulars of Vaccination performed by Vaccinators attached*

DISTRICTS.	Number of Municipalities, Dispensaries, &c., in the Districts to which Vaccinators were attached.	Number of Vaccinators attached to the Municipalities, Dispensaries, &c., in the districts during the season.	TOTAL NUMBER OF PERSONS VACCINATED. Males.	Females.	TOTAL.	Average number of persons vaccinated by each Vaccinator.	PRIMARY VACCINATION. Total. Males.	Females.	TOTAL.	Successful. Under one year.	One and under six years.	Above six years.	TOTAL AT ALL AGES.*
Burdwan	5	5	1,644	1,343	2,987	597	1,613	1,338	2,951	277	1,459	1,154	2,890
Bankura	2	3	703	658	1,361	454	679	637	1,316	118	1,031	141	1,290
Birbhum	1	1	143	126	269	269	143	126	269	15	178	77	265
Midnapore	1	6	469	299	768	128	446	297	743	287	195	180	662
Hughli	4	4	1,632	1,160	2,792	698	1,586	1,117	2,703	378	1,332	607	2,397
Serampore	5	5	950	788	1,738	347	940	784	1,724	238	1,104	359	1,701
Howrah	1	5	2,947	2,600	5,547	1,109	2,844	2,557	5,401	740	3,970	677	5,387
24-Pergunnahs	10	14	2,144	1,981	4,125	295	2,103	1,961	4,064	532	2,572	872	3,976
Nuddea	9	11	1,330	1,204	2,534	230	1,277	1,164	2,441	139	1,539	748	2,426
Jessore	2	3	300	175	475	158	300	175	475	4	174	281	459
Khulna	1	1	6	......	6	6	6	......	6	......	......	5	5
Murshidabad	6	10	2,028	1,421	3,419	345	1,962	1,394	3,356	242	1,892	1,148	3,282
Dinagepore	1	1	118	53	171	171	91	52	143	22	69	20	111
Rajshahye	1	2	320	207	527	263	317	204	521	155	196	137	488
Rungpore	2	4	244	121	365	91	232	110	342	43	179	113	335
Bogra	5	5	152	110	262	52	150	109	259	62	147	29	238
Darjiling	2	2	848	739	1,587	793	848	739	1,587	449	356	782	1,587
Julpaiguri	1	1	10	5	15	15	9	5	14	......	6	3	9
Dacca	2	4	1,244	999	2,243	561	1,244	999	2,243	294	1,176	669	2,139
Faridpore	1	1	1,578	1,007	2,585	2,585	1,578	1,007	2,585	......	......	......	......
Backergunge	1	1	258	75	333	333	229	65	294	9	44	201	254
Mymensing	9	9	852	948	1,800	200	849	948	1,797	445	801	361	1,607
Tipperah	6	6	2,051	1,530	3,581	597	2,012	1,507	3,519	462	1,917	867	3,246
Chittagong	7	10	365	325	690	69	365	321	686	131	300	53	484
Noakhalli	4	4	409	242	651	163	406	242	648	15	245	336	596
Patna	4	22	4,163	3,202	7,365	335	3,846	3,052	6,898	3,005	3,071	189	6,265
Gya	8	8	1,780	1,473	3,253	407	1,726	1,440	3,166	133	2,042	405	2,580
Shahabad	7	8	2,291	1,732	4,023	503	2,258	1,704	3,962	1,003	2,144	378	3,525
Mozufferpore	5	5	1,308	827	2,135	427	1,305	827	2,132	664	1,248	17	1,929
Durbhanga	5	10	2,256	1,843	4,099	410	2,250	1,834	4,084	121	3,590	87	3,798
Sarun	6	11	*1,592	1,282	2,874	261	1,563	1,264	2,827	456	1,463	532	2,451
Chumparun	5	9	435	290	725	80	430	286	716	50	329	176	555
Monghyr	2	5	3,391	2,360	5,751	1,150	3,320	2,329	5,649	745	4,340	271	5,356
Bhagulpore	3	10	444	419	863	86	441	411	852	90	615	116	826
Purneah	1	1	221	193	414	414	204	177	381	155	170	48	373
Maldah	2	2	704	584	1,288	644	691	576	1,267	184	279	742	1,205
Cuttack	4	7	853	498	1,351	193	778	487	1,265	117	723	94	934
Poori	1	2	297	132	429	214	292	132	424	16	114	185	315
Hazaribagh	1	1	96	61	157	157	91	59	150	......	118	2	120
Lohardugga	1	1	727	459	1,186	1,186	453	429	882	200	407	76	883
Singbhum	1	2	39	26	65	32	37	23	60	9	11	15	35
Manbhum	3	2	16	10	26	13	10	10	20	3	8	8	19
GRAND TOTAL ...	145	221	43,358	33,507	76,865	348	41,924	32,898	74,822	12,104	41,629	13,220	66,953

* The percentages have been calculated

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th May 1884.

each Circle of Superintendence during the year 1883-84.

...DITURE.		PAID FROM—							
Contingencies.	TOTAL COST.	Imperial Funds.	Provincial Funds.	Local Funds.	Municipalities.	Native States.	TOTAL.	Number of successful primary and re-vaccinations.	Average cost of each successful case.
11	12	13	14	15	16	17	18	19	20
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.
375 12 0	5,108 3 0	......	2,710 0 0	......	2,398 3 0	......	5,108 3 0	8,496	0 9 7¼
535 1 9	37,231 5 9	......	37,231 5 9	......	......	......	37,231 5 9	3,41,819	0 1 8¾
701 0 0	4,878 5 4	......	2,365 5 4	......	2,513 0 0	......	4,878 5 4	11,192	0 0 11¾
1,236 1 9	42,109 11 1	......	39,596 11 1	......	2,513 0 0	......	42,109 11 1	3,53,011	0 1 10¾
681 0 0	23,810 0 8	......	23,810 0 8	......	......	......	23,810 0 8	2,19,097	0 1 8¾
204 12 4	13,739 11 11	......	13,739 11 11	......	......	240 0 0	13,979 11 11	1,34,512	0 1 7¾
241 6 3	8,437 15 3	......	8,437 15 3	......	......	......	8,437 15 3	1,06,091	0 1 3¾
220 3 9	14,624 15 3	......	14,624 15 3	......	......	......	14,624 15 3	3,50,169	0 0 8
207 13 9	6,335 11 7	......	6,335 11 7	......	......	208 14 0	6,544 9 7	51,531	0 1 11¾
24 5 0	8,262 1 8	......	8,262 1 8	......	......	......	8,262 1 8	38,864	0 3 4¾
3,281 6 10	1,22,428 6 5	......	1,17,517 3 5	......	4,911 3 0	448 14 0	1,22,877 4 5	12,31,771	0 1 6½

to Municipalities, Dispensaries, &c., in the Province of Bengal during the year 1883-84.

RE-VACCINATION.							NUMBER VACCINATED AMONG—				PERCENTAGE OF SUCCESSFUL CASES.		REMARKS.
Total.			Successful.										
Males.	Females.	TOTAL.	Under one year.	One and under six years.	Above six years.	TOTAL AT ALL AGES.	Hindus.	Mahomedans.	Christians.	Other races.	Primary.	Re-vaccination.	
31	5	36	......	1	14	15	2,019	958	10	......	98·76	41·66	
24	21	45	......	4	33	37	1,321	35	5	......	98·54	82·22	
......	......	......	......	......	......	......	160	105	4	......	98·51	......	
23	2	25	......	......	14	14	615	153	......	......	89·09	56·	
46	43	89	......	1	20	21	2,323	452	17	......	92·01	24·41	
10	4	14	......	1	8	9	1,158	246	11	23	98·66	64·28	
103	43	146	......	6	87	93	3,711	1,746	90	......	99·75	63·69	
40	21	61	......	......	40	40	3,028	1,033	33	31	98·14	68·96	
53	40	93	2	11	23	36	1,817	682	34	1	99·38	38·71	
......	......	......	......	......	......	......	214	233	14	14	98·28	......	
......	......	......	......	......	......	......	1	5	......	......	83·33	......	
66	27	93	......	4	66	70	2,222	1,140	12	75	98·38	78·65	
19	9	28	1	21	4	26	75	54	4	38	84·09	96·29	
3	3	6	......	1	5	6	227	280	2	18	97·21	100·	
12	11	23	......	3	14	17	178	181	3	3	98·82	85·	
2	1	3	......	1	......	1	125	134	......	3	99·16	33·33	
......	......	......	......	......	......	......	852	39	54	642	100·	......	
1	......	1	......	1	......	1	10	......	2	3	64·28	100·	
......	......	......	......	......	......	......	1,088	1,144	11	......	98·25	......	
......	......	......	......	......	......	......	1,659	609	......	257	......	......	
29	10	39	......	3	16	19	131	202	......	......	95·13	67·85	As the Emigrants generally leave soon after they have been vaccinated, it is not always possible to ascertain the results of the operations.
3	......	3	......	......	3	3	840	949	9	2	89·82	100·	
39	23	62	7	29	15	51	1,325	2,225	4	27	92·50	85·	
......	4	4	......	......	......	......	176	456	11	47	72·89	......	
3	......	3	......	......	2	2	166	494	1	......	95·36	66·66	
317	150	467	......	59	46	105	4,349	2,470	513	......	93·70	23·28	
54	33	87	2	30	34	66	2,091	1,154	5	3	95·13	84·61	
33	28	61	2	21	15	38	2,405	1,386	34	108	92·19	65·51	
3	......	3	......	......	......	......	1,300	608	4	223	91·11	......	
6	9	15	......	11	4	15	3,137	737	10	215	95·16	100·	
29	18	47	......	5	20	25	1,691	1,033	35	115	88·77	89·28	
5	4	9	......	2	5	7	411	258	30	26	79·28	77·77	
71	31	102	......	4	9	13	4,831	830	56	34	95·04	12·74	
3	8	11	......	1	6	7	612	217	33	1	97·06	63·63	
17	16	33	......	8	12	20	197	82	32	103	98·15	60·60	
13	8	21	5	6	10	21	878	410	......	......	95·10	100·	
75	11	86	......	10	8	13	1,181	68	57	45	78·02	18·57	
5	......	5	1*	......	2	3	401	6	17	5	79·71	76·	
5	2	7	......	1	5	6	97	60	......	......	80·	85·71	
379	25	304	......	9	292	301	490	335	243	118	95·41	99·66	
2	3	5	......	......	......	......	40	2	9	14	71·42	......	
6	......	6	......	......	3	3	18	8	......	......	95·	50·	
1,430	613	2,043	20	254	830	1,104*	49,950	23,279	1,442	2,194	94·60	56·67	

after deducting the unknown cases.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

COMPARATIVE STATEMENT No. IV.—*Showing the number of Persons primarily Vaccinated and the number of those Persons who were successfully Vaccinated in each of the undermentioned Official years.*

Establishment.	Persons Primarily Vaccinated. Years ended 31st March 1874-75. Total number.	Number successfully vaccinated.	1875-76. Total number.	Number successfully vaccinated.	1876-77. Total number.	Number successfully vaccinated.	1877-78. Total number.	Number successfully vaccinated.	1878-79. Total number.	Number successfully vaccinated.
Government	7,01,388	6,82,606	7,46,223	7,28,400	10,79,965	10,61,923	8,88,622	8,75,139	5,06,487	4,93,020
Municipal	68,880	63,205	59,707	53,905	84,831	79,411	86,875	80,467	73,140	67,083
Local funds	174	115	307	294	978	883	1,148	930	1,354	1,253
Native States	569	477	1,965	1,740	3,562	3,073	3,010	2,512	3,329	2,934
Dispensaries	23,670	20,186	15,243	13,120	20,010	17,706	22,919	20,628	10,475	9,292
Work done by Ex-inoculators.	1,52,290	1,13,719	2,45,355	2,02,234	2,96,610	2,84,451	2,38,220	2,05,820	6,52,009	6,35,453
TOTAL ...	9,45,971	8,80,306	10,68,809	9,99,693	14,85,956	14,47,537	12,40,800	11,85,496	12,76,800	12,39,135

Establishment.	1879-80. Total number.	Number successfully vaccinated.	1880-81. Total number.	Number successfully vaccinated.	1881-82. Total number.	Number successfully vaccinated.	1882-83. Total number.	Number successfully vaccinated.	1883-84. Total number.	Number successfully vaccinated.
Government	6,16,343	6,04,111	8,98,500	8,88,278	8,31,495	8,23,212	6,80,623	6,72,185	378,597	373,231
Municipal	65,395	56,847	53,032	49,927	62,588	59,403	61,051	58,250	63,518	59,254
Local funds	1,709	1,426	326	409	355	330	......	......	......	......
Native States	3,909	3,156	4,462	3,581	1,374	1,212	19,136	16,904	35,263	31,967
Dispensaries	8,956	7,805	3,580	2,546	6,027	5,532	11,329	9,530	6,591	3,684
Work done by Ex-inoculators.	10,21,130	10,08,651	4,22,703	4,14,178	4,37,619	4,25,490	4,74,207	4,60,934	866,550	856,717
TOTAL ...	17,17,433	16,81,996	13,83,703	13,59,267	13,39,448	13,15,199	12,46,046	12,23,943	1,350,519	1,324,853

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th May 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

A.

Statement showing the deaths from Small-pox during the year 1883-84 *in the* AREAS IN WHICH VACCINATION WAS PERFORMED.

CIRCLES.	DISTRICTS.	AREAS.	POPULATION.	DEATHS DURING—													RATIO OF DEATHS PER 1,000 OF POPULATION.
				April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	TOTAL.	
		Calcutta	433,210	19	5	3	2	...	...	...	1	5	16	13	99	193	·44
METROPOLITAN CIRCLES.	Burdwan	Burdwan	27,330	2	3	...	...	...	...	...	...	...	...	...	...	5	·13
		Kalna	92,484	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Ranigunge	135,646	...	...	...	...	...	...	...	...	...	...	1	1	2	·01
		Assensole	98,812	...	...	...	...	...	...	...	...	...	...	1	1	2	·02
		Sahibgunge	75,171	...	...	...	...	...	...	...	6	5	...	...	1	12	·15
		Khandghosh	54,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Raona	97,190	...	...	...	...	...	...	...	...	...	5	...	1	6	·06
		Gangur	102,748	...	...	...	...	...	...	...	...	...	...	1	...	1	·009
		Selimabad	71,709	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Ausgram	97,311	...	1	...	...	...	...	...	...	...	3	...	...	4	·04
		Ketugram	73,723	3	3	22	3	...	...	...	2	1	10	1	...	45	·61
		Mangalkot	73,543	1	...	...	...	...	...	...	...	4	...	5	6	16	·21
		Katwa	70,334	2	2	1	1	...	...	...	...	...	...	1	...	7	·09
		Kaksa	38,989	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Monteswur	63,053	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Bud-Bud	79,073	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Purbasthali	82,070	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
	Bankura	Bissenpore	119,595	...	...	...	...	...	...	...	...	...	...	...	1	1	·008
		Gungajalghatti	172,607	...	...	...	...	...	...	1	...	...	...	...	...	1	·005
		Bankura	108,804	...	...	...	...	...	...	...	1	...	...	...	1	2	·01
		Anda	119,321	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sonamukhi	80,016	2	...	1	1	1	...	...	...	...	...	...	...	8	·09
		Kotalpore	94,964	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Indas	78,809	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Simlapal	99,122	...	...	...	...	...	...	...	...	...	...	2	...	2	·02
		Raipur	95,802	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Birbhum	Soori	118,891	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dubrajpore	120,506	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rampurhat	87,774	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bolpur	107,893	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sakullpur	122,723	...	...	...	2	2	1	...	1	1	...	1	2	10	·08
		Monreswar	88,836	...	...	...	...	...	...	...	...	...	3	1	1	5	·05
		Nulhati	133,897	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Midnapore	Tamlook	80,049	1	...	2	...	...	...	...	...	...	2	...	...	5	·06
		Maslandpur	80,569	1	...	...	...	...	...	...	...	...	...	1	1	3	·03
		Contai	130,654	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chandrakona	87,971	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Garbeta	138,023	2	...	...	...	...	...	...	...	...	...	...	...	2	·01
		Midnapur	128,546	2	6	3	1	...	...	...	...	...	...	...	...	12	·09
		Narainghar	129,190	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dantun	128,447	2	...	...	...	1	1	...	...	...	...	...	...	4	·03
		Gopiballabpore	139,928	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhargaon	59,782	2	1	...	...	...	...	...	...	...	...	...	...	3	·05
		Binpur	90,704	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Salbuni	53,617	...	...	2	1	1	...	...	...	...	...	...	...	4	·07
		Keshpur	95,609	...	...	...	...	...	...	...	...	6	...	...	2	8	·08
		Daspur	115,269	...	...	1	1	...	...	...	...	...	...	1	5	8	·07
		Debra	70,126	...	...	...	...	...	...	...	...	...	7	3	...	10	·14
		Sabang	201,714	6	4	4	2	3	2	4	5	3	9	8	6	56	·27
		Panchkura	142,081	...	2	1	1	...	1	...	3	...	...	3	1	12	·08
		Suttahatta	54,624	...	...	...	...	2	...	...	...	...	...	...	...	2	·03
		Nandigram	121,895	...	2	2	...	...	3	...	...	...	1	...	...	8	·06
		Egra	63,417	...	...	...	...	...	...	1	...	...	...	...	...	1	·01
		Pataspur	87,324	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ghatal	84,093	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Hughli	Polba	46,173	...	...	...	...	...	...	...	...	...	...	2	1	3	·06
		Hughli	15,458	...	...	...	...	...	...	1	...	...	...	...	...	1	·06
		Dhaniakhali	93,537	...	...	...	...	...	...	...	...	...	...	1	5	6	·06
		Balagarh	48,218	1	...	...	...	...	...	...	...	...	...	...	...	1	·02
		Pandua	66,113	...	...	...	...	...	...	...	...	...	2	1	2	5	·07
		Jahanabad	99,905	...	...	...	...	1	...	...	...	...	...	...	1	2	·02
		Khanakul	125,502	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Goghat	98,422	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Singoor	40,943	...	1	...	...	...	...	...	...	1	1	...	...	3	·08
		Haripal	84,933	1	1	...	...	...	...	...	...	...	...	...	1	3	·03
		Chanditola	84,387	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kristonagar	55,107	1	...	...	...	...	...	...	...	...	...	...	2	...	·05
	Howrah	Domjor	128,477	...	...	...	...	...	...	...	...	...	...	...	1	1	·00
		Ulubaria	81,345	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jagathballbpur	77,530	...	...	...	...	...	...	...	...	...	1	1	2	4	·05
		Amta	109,968	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagnan	63,503	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shampore	68,361	...	1	...	...	...	...	...	...	...	...	...	...	1	...
	24-Pergunnahs	Barrackpore	71,680	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dum-Dum	12,209	1	...	...	...	...	...	...	1	1	...	...	...	3	·24
		Baraset	62,598	...	...	...	...	...	...	...	...	...	...	1	13	11	·22
		Hossainabad	67,227	...	...	...	1	...	...	...	...	...	...	1	...	2	·02
		Baduria	130,205	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barripore	75,830	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jainagar	76,140	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Diamond-Harbour	52,828	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tallygunge	47,703	1	1	4	2	1	...	...	...	...	...	...	...	9	·18
		Atchipur	62,536	...	...	...	...	1	...	...	...	...	1	1	...	3	·04
		Vishnapur	71,717	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sonarpur	42,434	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhangor	78,852	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement showing the deaths from Small-pox during the year 1883-84 in the AREAS IN WHICH VACCINATION WAS PERFORMED—continued.

Circles.	Districts.	Areas.	Population.	Deaths during— April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	Total.	Ratio of deaths per 1,000 of population.
Metropolitan Circles—concluded.	24-Pergunnahs—concluded.	Deganga	53,516	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Habara	68,985	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Naihatti	55,429	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bussirhat	76,337	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Haros	40,292	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Canning or Matlah	47,518	...	...	...	...	...	...	...	...	1	1	...	...	2	·04
		Sultanpore	90,319	...	1	...	...	...	...	...	...	...	...	...	...	1	·008
		Delupore	43,455	...	...	...	...	...	...	...	...	...	...	...	3	3	·05
		Bankipore	107,275	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mathurapore	60,453	...	...	...	...	...	...	...	...	...	...	...	4	4	·05
	Nuddea	Kishnaghur	77,887	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kushtia	17,726	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khumerkhali	92,206	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranaghat	71,411	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chagda	57,631	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jogooli	38,308	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chuadanga	21,818	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Meherpore	65,954	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hanskhali	45,340	...	...	...	...	...	...	...	...	...	...	1	...	1	·02
		Kishengunge	32,701	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chapra	63,509	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nakashipara	59,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tehatta	89,180	...	...	...	...	...	...	...	...	...	...	...	21	21	·23
		Karimpore	102,754	3	8	7	13	7	1	1	10	21	23	20	32	146	1·43
		Naupara	136,713	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhaluka	41,929	...	...	...	...	...	...	...	...	...	...	2	...	2	·04
		Bhalulia	68,184	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alamdanga	89,947	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Damurhuda	63,014	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalupol	39,390	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Santipore	24,177	...	...	...	...	...	...	...	...	...	1	...	...	1	·04
	Jessore	Jessore	158,859	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Keshubpore	85,450	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhenida	102,627	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kotchandpore	44,038	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Magura	159,162	...	...	...	...	...	...	...	...	...	...	...	1	1	·006
		Narail	151,362	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagherpara	63,902	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Monirampore	155,611	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gadkhali	67,420	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Kaligunge	89,202	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Salikha	60,464	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Muhamadpore	83,677	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalia	72,947	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Lohagara	103,863	1	...	...	...	...	...	...	...	...	...	...	...	1	·009
		Salkopa	138,305	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Moheshpore	112,137	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bongong	59,068	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ganapotta	61,052	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sarsha	79,046	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Gaghatta	50,223	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Khulna	Khulna	127,390	...	...	...	...	...	1	...	...	...	...	...	...	1	·007
		Damuria	109,020	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Baitaghata	37,561	1	...	...	...	...	...	...	...	...	...	...	...	1	·02
		Paikracha	70,478	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagirhat	137,818	2	1	...	...	...	...	...	...	...	...	...	...	3	·02
		Matlahat	50,478	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rampal	49,827	...	...	...	1	...	...	...	...	...	...	...	...	1	·02
		Morelgunge	62,670	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
		Satkhera	96,614	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalarua	81,398	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Magoora	48,212	...	...	...	...	1	...	1	2	...	...	...	...	4	·08
		Asasuni	62,412	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaligunge	146,130	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Murshidabad	Shujagunge	8,345	1	2	5	...	...	...	...	...	...	...	...	...	8	·05
		Gorabazar	12,633	...	1	...	...	1	...	...	...	...	...	...	1	3	·23
		Barwan	96,868	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhartpur	70,620	6	11	5	...	...	...	...	...	...	...	...	...	22	·27
		Assanpore	11,177	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Raghunathgunge	57,269	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dewanserai	55,036	...	...	...	...	...	...	...	...	...	...	1	1	2	·03
		Goas	78,423	6	15	12	50	7	...	...	...	5	1	...	1	97	1·23
		Jelinghi	108,508	33	32	5	3	...	...	...	...	...	...	...	...	73	·67
		Daulatbazar	39,508	4	3	...	...	2	...	...	...	...	...	6	3	18	·45
		Hariharpara	57,135	12	15	2	3	...	...	...	...	...	...	...	...	32	·56
		Nowada	47,539	1	...	...	...	...	...	...	3	1	...	...	...	5	·10
		Gokurn	41,895	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kallanganj	37,208	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manulabazar	1,979	...	...	...	...	...	...	...	...	...	...	...	1	1	·50
		Bhagwangola	57,238	...	...	...	...	...	...	...	...	1	5	1	...	7	·12
		Shamsherganj	60,538	2	...	...	...	...	...	...	...	...	...	...	...	2	·03
		Suti	66,550	...	...	...	...	...	...	...	...	...	...	...	7	7	·10
		Mirzapore	45,490	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khargaon	54,018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Burwah	70,659	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL OF METROPOLITAN CIRCLE	13,585,759	105	118	83	86	31	10	9	34	51	78	71	137	813	·06
		Suburbs of Calcutta	251,439	20	12	4	2	...	...	...	2	1	11	39	29	120	·47
		TOTAL, INCLUDING SUBURBS OF CALCUTTA	13,837,198	125	130	87	88	31	10	9	36	52	89	110	166	933	·06

Statement showing the deaths from Small-pox during the year 1883-84 in the Areas in which Vaccination was performed—continued.

Circles.	Districts.	Areas.	Population.	Deaths during— April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	Total.	Ratio of deaths per 1,000 of population.
Darjiling Circle.	Dinagepore	Dinagepore	417	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rajarampore	199,400	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Birgunge	139,891	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Thakurgaon	220,397	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranisankail	75,102	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pirgunge	93,880	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hemtabad	85,287	...	2	...	...	...	...	...	...	...	...	...	...	2	·02
		Nawabgunge	61,637	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Kaligunge	94,882	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bansihari	81,877	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patnitolla	69,238	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mohadebpore	67,265	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Porsha	48,586	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patiram	70,661	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gangarampore	74,101	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chintamon	52,058	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Parbatipore	66,708	...	...	1	...	...	...	...	...	...	1	...	...	2	·02
	Maldah	English Bazar	72,615	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Maldah	60,894	...	...	...	1	...	...	...	...	...	...	...	...	1	·01
		Gajol	54,817	...	...	...	2	...	...	...	1	...	...	...	1	4	·07
		Ratua	80,024	2	...	...	...	...	...	...	...	...	...	...	...	2	·02
		Kharba	103,051	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gomastapore	52,810	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaluchuck	115,692	1	...	...	...	...	...	...	...	...	...	...	...	1	·008
		Shibgunge	102,162	1	...	1	...	...	...	...	...	...	...	...	...	2	·01
		Nawabgunge	66,453	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Rajshahye	Nattore	153,662	...	...	...	...	...	...	...	...	...	...	1	...	1	·006
		Lalpore	82,689	...	...	...	3	...	...	...	...	...	...	...	...	3	·03
		Bagmara	121,581	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Naugaon	85,840	...	...	...	...	...	...	...	...	2	...	...	...	2	·02
		Manda	103,308	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Putia	121,238	...	...	...	...	...	...	1	...	...	...	1	...	2	·02
		Singra	112,607	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Beauleah	81,096	...	...	...	...	...	...	3	...	...	...	...	...	3	·03
		Barigram	121,554	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Charghat	126,433	...	...	...	...	...	...	...	...	...	...	...	1	1	·007
		Godagari	43,769	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Panchupore	79,431	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tanor	85,609	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Rungpore	Kaligange	155,607	...	...	...	...	...	...	...	...	...	...	1	...	1	·008
		Ulipore	215,213	...	1	...	...	...	...	...	...	...	...	...	...	1	·004
		Sadullapore	112,563	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Darwani	137,051	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nisbetgunge	124,507	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Maigunge	116,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jaldaha	163,672	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dimla	138,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barahari	142,512	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kumargunge	94,955	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nagheswari	177,220	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mithapuker	99,053	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pirgunge	69,008	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhowanigunge	57,803	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sundargunge	91,160	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Govindgunge	189,027	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Bogra	Bogra	227,207	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shariakandi	123,490	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sherpore	73,780	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shibgunge	59,080	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Panchbibi	66,724	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Badalgachi	39,374	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Adamdighi	94,534	...	...	...	...	...	...	...	...	...	...	...	3	3	·03
		Khetlal	40,023	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Darjiling	Darjiling	45,300	2	...	...	...	...	...	...	...	...	...	...	...	2	·04
		Phansidewa	63,241	...	...	...	2	...	...	...	...	...	...	...	...	2	·03
		Kurseong	26,937	14	17	...	...	...	...	...	...	...	...	...	...	31	1·15
		Kalimpong	12,083	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Julpaiguri	Saikurpore	80,178	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Boda	178,643	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Julpaiguri	75,418	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patgram	64,636	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mynaguri	66,451	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alipur	32,080	1	6	1	...	...	...	...	...	...	...	...	...	8	·24
		Karanti	32,453	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dhupguri	51,697	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
	Purneah	Sudder	138,704	...	3	...	...	...	...	...	...	1	...	...	...	4	·02
		Amur Kasba	124,889	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dhamdaha	100,301	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gandwarah	123,945	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Arraria	200,012	...	...	...	...	...	...	...	...	...	...	...	1	1	·004
		Matia	94,115	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranigunge	107,552	...	...	...	1	1	...	...	...	...	...	...	...	2	·01
		Kissengunge	158,100	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhahadurgunge	196,142	1	...	...	...	...	...	...	...	...	...	...	...	1	·001
		Kaliagunge	277,059	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kadwa	134,275	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Balarampore	155,031	...	...	5	...	...	...	...	...	...	...	...	...	5	·03
		Monihari	54,456	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total for Darjiling Circle	8,890,901	22	30	8	9	1	...	4	1	3	1	4	8	91	·01

Statement showing the deaths from Small-pox during the year 1883-84 *in the* AREAS IN WHICH VACCINATION WAS PERFORMED—continued.

Circles.	Districts.	Areas.	Population.	April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	Total.	Ratio of deaths per 1,000 of population.
Ranchi Circle.	Manbhum	Purulia	177,487	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhalda	67,133	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagmundi	33,384	3	4	1	...	...	...	...	...	...	...	...	...	8	·23
		Ichaghar	61,242	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barabhoom	133,847	...	...	...	...	...	...	...	1	...	...	...	...	1	·007
		Manbazar	68,615	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Roghunathpore	108,668	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gourandi	45,793	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chas	89,173	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Govindpore	39,673	2	...	...	...	...	...	...	...	...	...	...	...	2	·05
		Nirsha	50,627	...	...	...	...	...	...	...	1	2	...	...	...	3	·05
		Topechanchi	48,013	...	...	3	6	8	...	1	...	...	...	...	...	18	·37
	Singbhum	Chaibassa	205,652	4	...	...	...	...	...	...	...	...	...	...	...	4	·01
		Chakuldharpore	76,408	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ghatsilla	165,709	...	4	9	...	2	15	...	...	...	...	...	...	30	·18
		Seraikela	77,062	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kharsowan	31,127	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Hazaribagh	Hazaribagh	240,724	...	2	...	...	...	14	...	2	17	21	62	22	140	·58
		Gowan	53,375	...	1	1	...	...	...	...	1	5	2	4	12	26	·48
		Bogodhar	59,302	4	17	7	1	12	...	2	4	11	6	4	3	71	1·19
		Kashmar	47,094	...	...	6	2	1	...	...	...	...	...	2	...	11	·23
		Chowparan or Chorpa	70,437	...	...	...	1	2	1	8	...	...	1	2	4	19	·26
		Pachamba or Giridhi	86,097	...	...	9	4	...	...	...	...	1	1	...	3	18	·20
		Jugeswar	53,593	4	2	1	...	3	...	...	...	...	...	1	8	19	·35
		Barhi	52,054	...	...	1	3	...	...	...	...	...	...	10	4	18	·34
		Dumurlu	68,685	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kharakdihi	150,546	...	2	...	...	...	...	...	...	...	...	...	...	2	·01
		Koderma	78,802	...	...	...	...	...	...	...	...	2	...	4	2	8	·10
		Tondowa	55,780	1	...	...	...	...	...	...	...	...	...	3	7	11	·19
	Lohardugga	Ranchi	122,152	...	...	...	...	...	...	...	...	...	...	...	1	1	·008
		Lodhma	67,988	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Choreya	56,290	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Torpa	101,110	...	...	...	...	...	...	...	...	...	...	...	3	3	·02
		Lohardugga	122,023	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Koranbe	89,078	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Tamar	95,698	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Basia	88,234	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Palkot	104,719	...	...	...	...	3	...	...	...	...	...	...	...	3	·02
		Burwya	51,080	...	...	4	2	...	...	...	...	...	...	...	...	6	·11
		Piru	66,061	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Balumat	66,253	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ramkunda	64,300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chhatarpur	36,591	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL FOR RANCHI CIRCLE	4,027,253	18	32	42	19	31	30	11	9	38	32	94	69	425	·10
Sonthal Pergunnahs Circle.	Sonthal Pergunnahs.	Dumka	363,186	...	...	...	...	...	...	2	...	1	...	...	...	3	·008
		Rajmahal	255,825	4	2	...	...	...	...	...	...	...	...	...	...	6	·02
		Pakur	204,919	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Deoghur	397,670	...	3	8	4	3	4	6	5	18	19	19	13	102	·25
		Godda	348,193	3	6	3	3	2	...	...	...	...	...	...	...	17	·04
	Bhagulpore	Kolgong	186,565	3	9	3	5	1	3	...	8	...	2	2	12	48	·25
		Banka	134,227	...	...	1	2	1	...	...	...	1	1	3	4	13	·06
		Madehpur	262,678	1	...	...	...	...	...	...	...	...	...	...	...	1	·003
		Kissongunge	135,528	...	...	1	...	...	...	...	...	...	...	...	...	1	·007
		Bhagulpore	100,379	3	1	4	2	...	...	...	...	...	...	2	7	19	·18
		Sultangunge	98,427	7	12	10	10	3	4	...	...	1	...	3	10	60	·60
		Bihipore	98,403	2	7	1	...	...	...	...	...	...	...	...	1	11	·11
		Supole	209,042	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bongong	148,560	1	...	...	...	...	...	...	...	...	...	...	...	1	·006
		Amarpore	208,508	1	3	...	9	3	1	...	3	2	1	2	...	25	·11
	Monghyr	Monghyr	81,736	...	...	2	...	...	...	...	...	...	...	...	...	2	·02
		Gogri	305,954	4	7	...	...	...	1	...	...	2	...	4	6	24	·06
		Kharrakpore	143,079	15	24	3	10	...	...	1	3	3	7	9	33	108	·75
		Begusarai	370,794	7	...	1	1	...	...	...	...	...	...	7	57	73	·19
		Jamui	120,563	4	6	6	5	...	2	...	...	...	...	10	7	40	·33
		Chakai	109,540	1	5	...	6	2	1	...	1	...	...	3	...	19	·17
		TOTAL FOR THE SONTHAL PERGUNNAHS CIRCLE.	4,440,876	56	85	43	57	15	16	9	20	28	30	64	150	573	·12
Eastern Bengal Circle.	Mymensing	Jamalpore	209,329	...	...	...	...	...	...	...	2	1	...	...	2	5	·02
		Kishorgunge	135,603	7	7	7	3	1	2	...	...	...	...	...	...	27	·19
		Atiah or Tangail	460,243	1	...	...	...	...	...	...	...	...	...	...	...	1	·002
		Guftergaon	117,759	...	...	...	...	...	...	...	16	...	...	...	...	16	·01
		Dewanganj	101,372	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bazidpur	202,053	...	...	...	...	1	...	...	2	...	1	1	...	5	·02
		Nickli	122,459	...	2	1	...	...	...	...	...	...	...	...	...	3	·02
		Pingna	76,262	...	...	...	...	3	...	...	...	2	...	...	...	5	·06
		Gopalpur	217,736	...	...	...	...	...	...	...	5	4	...	...	2	11	·05
		Netrokona	471,658	38	54	54	46	30	25	12	18	31	22	25	19	373	·79
	Faridpore	Faridpore	91,551	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhushna	107,415	...	...	...	...	...	1	...	...	...	...	...	...	1	·009
		Awanpore	100,257	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhanga	164,389	3	...	3	...	4	...	...	...	7	23	16	6	62	·37
		Maksudpore	158,933	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Madaripore	165,917	...	...	...	...	...	...	...	...	3	2	...	...	5	·03
		Kotalipara	66,153	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gopalgunge	85,341	...	...	...	...	...	...	...	...	2	...	...	...	2	·02
		Shibchar	116,043	5	1	...	...	...	...	...	1	...	3	3	2	15	·12
		Palang	256,250	...	...	...	1	...	...	...	...	...	...	...	...	1	·003
		Goalundo	76,254	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pangsa	141,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Belgachi	94,508	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Statement showing the deaths from Small-pox during the year 1883-84 *in the* AREAS IN WHICH VACCINATION WAS PERFORMED—concluded.

Circles.	Districts.	Areas.	Population.	Deaths during— April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	Total.	Ratio of deaths per 1,000 of population.
Eastern Bengal Circle—*concluded.*	Noakhalli	Sundip	72,467	39	5	16	1	2	4	2	2	1	..	...	1	73	1·00
		Bamni	41,731	...	...	...	...	...	...	...	...	...	..	...	...	...	...
		Begumgungo	128,933	1	3	...	...	...	...	...	...	...	..	.	7	11	·08
		Lakshmipur	113,321	1	1	...	...	...	...	...	...	1	5	24	24	56	·49
		Sudharam	96,184	...	...	...	...	...	...	...	...	...	...	...	..	..	..
		Ramgungo	80,742	...	...	...	..	...	...	...	...	5	99	114	67	285	3·52
	Dacca	Lalbagh	164,287	...	...	1	3	..	...	...	1	2	2	15	9	33	·20
		Kapasia	119,515	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rupgungo	164,159	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Munshigunge	243,463	..	...	...	2	1	...	...	...	...	1	...	1	5	·02
		Srinagar	275,984	10	4	...	...	...	...	...	...	...	...	...	...	14	·05
		Manikgungo	184,196	...	...	...	..	...	...	...	...	...	...	...	...	...	...
		Hariramporo	100,009	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sabhar	174,831	...	...	...	...	...	...	...	3	19	26	18	15	81	·46
		Raipura	202,738	...	...	...	...	...	...	...	...	...	1	1	...	2	·009
		Naraingungo	91,199	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Nawabgunge	160,235	3	6	1	...	...	...	...	...	...	...	...	1	11	·06
		Jaffirgungo	143,012	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Tipperah	Brahmanbaria	223,751	10	6	...	...	...	...	...	1	...	1	...	..	18	·08
		Nabinagar	175,971	11	25	5	1	...	1	...	...	...	1	...	...	44	·24
		Comilla	125,879	3	3	...	...	...	...	...	...	...	...	...	..	6	·04
		Chandina	78,521	16	27	12	5	1	...	...	...	3	...	...	..	64	·81
		Moradnagor	152,322	12	17	6	...	...	1	...	...	...	...	...	...	36	·23
		Daudkandi	143,222	6	5	...	...	...	...	...	1	...	2	...	1	15	·10
		Kasba	114,152	14	4	5	9	...	...	...	...	...	...	...	...	32	·28
		Hajigungo	172,347	6	6	5	1	7	1	2	5	4	10	8	2	57	·33
	Backergunge	Gulachipa	59,037	8	7	9	5	10	...	1	...	...	2	4	8	54	·91
		Gaurnaddi	184,192	...	...	3	2	3	2	1	3	4	7	5	1	31	·16
		Backergunge	135,336	9	2	12	8	...	...	...	...	...	...	...	1	32	·23
		Surupkati	160,284	...	1	...	...	1	2	2	...	1	3	2	...	12	·07
	Pubna	Serajgunge	219,185	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dulai	186,363	...	...	...	...	...	...	...	...	...	...	...	...	...	..
		Chatmohar	133,467	...	...	...	1	...	...	4	...	...	...	2	...	7	·05
		Mathura	102,186	...	. .	...	...	...	...	...	...	...	...	...	1	1	·009
		Pubna	189,648	...	...	...	...	...	...	...	...	1	4	...	2	7	·03
		Shazadpore	216,494	...	...	...	...	...	...	...	...	...	...	...	...	...	.
		Ulipara	171,711	...	...	...	..	...	...	...	...	...	...	...	...	...	.
		Raigungo	92,374	...	...	...	...	...	...	...	..	..	..	..	..	...	...
		TOTAL FOR EASTERN BENGAL CIRCLE	9,331,964	201	186	140	88	64	39	24	60	91	216	239	172	1,520	·16
Orissa Circle.	Cuttack	Cuttack	155,335	6	2	...	...	1	..	...	...	...	2	4	5	20	·12
	Balasore	Balasore	107,685	2	...	...	...	...	...	...	...	...	1	18	19	40	·37
		Basta	71,186	2	1	...	...	...	...	...	1	1	...	...	...	5	·06
		Jellasore	55,192	5	1	...	...	...	...	...	2	...	...	...	...	8	·14
		Bhadrak	169,972	8	1	...	...	1	1	...	1	6	5	2	11	36	·21
		Dhamnagar	132,521	25	8	2	...	3	1	...	...	...	3	19	30	91	·68
	Poori	Poori	197,841	23	16	11	7	3	...	2	1	2	...	...	2	67	·33
		Khurda	269,478	14	12	4	8	8	1	1	1	2	1	6	8	66	·24
		Bhanporo	53,927	47	46	45	48	57	32	16	14	13	59	18	9	434	8·04
		TOTAL FOR ORISSA CIRCLE	1,598,584	132	87	62	63	73	35	19	20	54	71	67	84	767	·41
Behar Circle.	Patna	Dinapore	67,612	...	1	...	1	...	...	...	...	...	4	...	2	8	·11
		Maner	98,516	...	...	2	5	1	3	...	...	...	...	...	12	23	·23
		Barrh	170,589	13	10	3	6	2	...	...	...	9	...	2	13	58	·34
		Fatuha	88,051	2	1	3	1	3	...	...	...	...	2	...	3	15	·17
		Behar	233,312	5	...	5	1	...	1	...	...	...	...	1	4	17	·07
		Attasarai	78,932	8	1	4	4	...	1	...	1	1	...	1	3	24	·30
		Silao	91,477	5	8	3	1	...	...	...	...	1	1	3	7	29	·31
		Patna	27,674	1	4	...	2	...	...	4	...	...	...	...	...	11	·39
		Bankipore	97,001	11	7	...	1	1	...	...	1	1	3	3	21	49	·50
		Massaudhi	120,613	7	3	4	2	1	...	...	...	3	8	5	5	38	·31
		Bikram	180,362	4	6	13	4	1	1	1	...	...	...	3	11	44	·24
		Mokameh	93,824	...	1	...	...	...	...	...	...	...	...	...	5	6	·06
		Hilsa	176,075	...	3	1	1	...	1	2	1	2	3	4	11	29	·16
	Gya	Jehanabad	269,468	6	3	...	9	6	6	4	3	8	9	41	30	125	·46
	Shahabad	Arrah	281,437	1	...	...	1	...	...	...	5	...	...	...	9	16	·05
		Piru	179,493	...	1	...	...	...	...	...	...	...	...	...	2	3	·01
	Chumparun	Bettiah	349,972	17	18	15	21	10	3	2	1	2	3	2	8	102	·29
		Motihari	166,441	9	19	17	29	8	7	2	...	15	9	7	13	135	·81
		Govindgungo	165,062	...	6	9	8	11	8	...	...	...	9	8	8	67	·40
		Bagaha	140,900	3	5	5	2	8	1	...	...	2	3	4	13	46	·32
		Dhaka	253,992	32	48	20	10	2	2	...	...	1	1	...	9	125	·49
		Kosaryia	177,082	23	43	26	20	3	1	...	2	3	2	...	2	125	·69
		TOTAL FOR THE BEHAR CIRCLE.	3,508,484	147	188	130	129	57	35	15	14	48	57	84	191	1,095	·31
		Total for the Vaccination Circles	46,068,470	720	743	515	455	272	165	91	161	319	512	705	939	5,597	·12
		MUNICIPALITIES, DISPENSARIES, &c.	2,225,015	113	118	67	39	25	12	4	15	32	70	183	488	1,166	·53
		GRAND TOTAL	48,293,494	833	861	582	494	297	177	95	176	351	582	888	1,427	6,763	·14

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th May 1884.

R. LIDDERDALE, M.D,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

B.

Statement showing the Total Deaths registered from Small-pox IN ALL THE DISTRICTS *of the Bengal Pro-* *during each month of the year* 1883-84

DISTRICTS.	POPULATION.	NUMBER OF DEATHS DURING— April 1883.	May 1883.	June 1883.	July 1883.	August 1883.	September 1883.	October 1883.	November 1883.	December 1883.	January 1884.	February 1884.	March 1884.	TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.	REMARKS.
Calcutta	433,219	19	5	3	2	...	.	..	1	5	16	43	99	193	·44	
Burdwan	1,391,823	9	9	25	4	...	...	...	8	10	19	10	15	109	·07	
Bankura	1,041,752	2	...	4	1	...	..	1	1	...	...	2	2	13	·01	
Birbhum	794,428	...	..	...	2	2	1	...	1	1	3	2	3	15	·01	
Midnapore	2,517,802	19	15	17	7	8	7	12	8	9	22	17	16	157	·06	
Hughli	660,813	1		1	...	1	1	1	...	...	2	4	...	11	·01	
Serampore	351,955	2	3	...	..	...	...	...	..	1	4	1	5	16	·04	
Total of Hughli district ..	1,012,768	3	3	1	...	1	1	1	..	1	6	5	5	27	·02	
Howrah	635,381	1	2	...	...	..	..	1	1	2	3	2	6	18	·02	
24-Pergunnahs	1,618,420	2	3	4	4	2	2	...	1	2	7	22	24	73	·04	
Suburbs of Calcutta ..	251,439	20	12	4	2	..	...	..	2	1	11	39	45	136	·54	
Total of 24-Pergunnahs ..	1,869,859	22	15	8	6	2	2	..	3	3	18	61	69	209	·11	
Nuddea	1,[illegible]55,721	3	8	7	13	7	1	2	12	21	27	29	70	206	·12	
Jessore	1,939,375	2	.	..	...	...	...	...	...	...	1	...	2	5	·002	
Murshidabad	1,226,790	66	70	30	57	10	1	...	3	7	6	8	18	285	·23	
Khulna	1,079,948	3	2	...	1	1	1	1	2	...	...	..	..	11	·01	
Dinagepore	1,514,346	...	2	1	...	...	...	...	...	...	1	1	.	5	·003	
Rajshahye	1,338,638	...	...	...	3	...	...	4	...	2	...	2	1	12	·008	
Rungpore	2,097,964	...	1	...	...	...	...	...	...	...	..	1	4	6	·002	
Bogra	734,358	..	...	...	...	...	...	...	...	...	...	..	4	4	·005	
Pubna	1,311,728	..	...	...	1	.	...	4	...	1	4	2	4	16	·01	
arjiling	156,157	16	21	...	2	...	...	1	.	...	...	...	.	40	·25	
Julpaiguri	581,562	1	8	1	...	...	...	...	..	...	...	...	...	10	·01	
Dacca	2,116,350	13	10	2	5	1	...	...	4	21	32	36	39	163	·08	
Faridpore	1,631,734	8	1	3	1	4	1	.	1	12	28	19	8	86	·05	
Backergunge	1,900,889	57	43	48	40	43	18	23	19	40	13	27	26	427	·22	
Mymensing	3,051,966	60	92	71	57	35	30	18	49	[illegible]	23	38	28	510	·17	
Tipperah	1,519,358	166	114	40	29	13	3	2	7	7	15	21	14	374	·24	
Chittagong	1,132,341	2	2	1	...	...	...	...	...	...	..	...	...	5	·004	
Noakholli	820,772	43	9	16	1	5	4	2	2	7	105	140	102	436	·51	
Patna	1,756,856	93	63	51	35	15	9	7	3	19	40	101	270	709	·40	
Gya	2,124,682	68	72	61	70	46	10	13	20	85	99	223	552	1,328	·62	
Shahabad	1,964,909	6	6	14	8	3	...	...	5	...	1	6	24	73	·03	
Mozufferpore	2,582,060	53	45	14	7	4	1	3	2	4	6	20	38	197	·07	
Durbhanga	2,633,447	59	60	29	4	4	6	..	...	1	5	46	63	277	·10	
Sarun	2,280,382	161	93	110	70	37	13	14	6	26	36	92	384	982	·43	
Chumparun	1,721,608	117	170	111	104	46	26	6	5	28	38	30	85	766	·44	
Monghyr	1,969,774	52	70	30	33	10	8	1	4	5	7	35	119	374	·18	
Bhagulpore	1,966,158	18	37	22	30	14	10	2	11	8	19	46	101	318	·16	
Purneah	1,848,687	1	3	5	1	1	...	...	...	1	...	...	1	13	·007	
Maldah	710,448	4	...	4	3	...	..	...	1	...	...	...	2	14	·01	
Sonthal Pergunnahs .	1,568,093	7	11	11	7	6	4	8	5	19	33	31	29	170	·10	
Cuttack	1,795,065	273	134	46	26	24	21	2	5	9	38	167	319	1,064	·59	
Poori	888,487	104	93	68	77	80	34	19	16	47	62	24	25	648	·75	
Balasore	945,280	50	14	5	1	5	7	3	5	16	22	64	65	257	·27	
Hazaribagh	1,104,742	9	24	26	11	18	15	10	7	36	53	98	98	405	·36	
Lohardugga	1,609,244	...	...	4	2	3	...	...	...	...	1	2	5	17	·01	
Singbhum	551,961	22	15	16	4	1	...	...	...	4	4	...	...	66	·11	
Manbhum	1,058,228	5	4	4	6	8	...	1	2	2	...	...	...	32	·03	
TOTAL FOR THE DISTRICTS IN BENGAL	66,103,884	1,478	1,348	906	729	454	243	161	218	403	825	1,411	2,623	10,899	·16	
Monthly Ratios per 1,000 of Population	......	·02	·02	·01	·01	·006	·003	·002	·003	·007	·01	·02	·03			
TOTAL FOR THE PROVINCE INCLUDING CALCUTTA	66,597,103	1,497	1,353	909	731	454	243	161	219	408	841	1,454	2,722	11,082	·16	
MONTHLY RATIOS PER 1,000 OF POPULATION ...	......	·02	·02	·01	·01	·006	·003	·001	·003	·007	·01	·02	·04			

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th May 1884.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

MUNICIPAL DEPARTMENT.

SANITATION.

CALCUTTA, THE 15TH AUGUST 1884.

RESOLUTION.

READ—

The Report of the Sanitary Commissioner for Bengal for the year 1883, and the Report on Vaccination in Bengal for the year 1883-84.

Read again—

The Reports for the previous year, and the Resolution recorded upon them.

In explaining the cause of delay in submitting the present Report, the Sanitary Commissioner urges that "the time allowed for the collection and analysis of the vaccination statistics of this great Province is quite insufficient." Every endeavour was made to complete the Vaccination Report in time for its incorporation with the General Report on Sanitation. Monthly returns were called for, and the vaccinating season was curtailed to admit of the earlier submission of the final returns for the year. Nevertheless, the time occupied in compiling and examining the returns was more than is allowed under existing orders. Considering the importance which is attached to the submission of the Sanitary Report of this Province by the prescribed date, the Lieutenant-Governor trusts that still further endeavours will be made to ensure its punctual submission in the future.

2. The year under review was a comparatively healthy one, though unfavourable from an agricultural point of view. The average rainfall throughout the Province was 58·81 inches against 66·95 inches, the average of previous years Owing to the irregular distribution of rain, the harvest, and the rice crop in particular, failed to some extent, and, as a consequence, the prices for food-grains rose everywhere, except in the Burdwan and Balasore districts, causing privation and suffering among the poorer classes. The districts which suffered most in this respect were Maldah, Khulna, the Jehanabad sub-division in Hooghly, Loharduggа, Durbhunga, and Monghyr.

3. Very little, if any, improvement was effected in the registration of vital statistics during the year. The Sanitary Commissioner observes that "the usual attention was bestowed on the subject by most of the Magisterial and Police authorities in the way of inspecting the registers, testing the chowkidars' reports, and warning or punishing, legally or departmentally, the reporters or recorders for remissness or neglect. But, with very few exceptions, their efforts to improve registration were at best partial or desultory, not having the least pretentions to system, persistency, or permanence." The districts in which the greatest interest was shown in the work were Burdwan, Bankoora, Beerbhoom, Midnapore, Rajshahye, Hooghly, 24-Pergunnahs, Nuddea, Jessore, Rungpore, Bogra, and Monghyr. Mention is made in particular of the good work done by Major Ramsay and his subordinates in the district of Nuddea, which "resulted in marked improvement in registration." The recorded death-rate of the district was 36 per mille against 40 in the previous year. This may, however, be accepted as approximately correct; and as the Sanitary Commissioner observes, "it should be remembered that the fever mortality was severer in this district in 1882." It is gratifying to notice the hearty co-operation afforded by the Municipality of Midnapore in the promotion of registration in that town. The apathy which is reported to have been shown in the matter by the members of the vaccination establishment calls for severe censure, and the Sanitary Commissioner should take such practical notice as he may think required of the conduct of those in fault.

4. Of 114 towns to which the Compulsory Registration Act IV (B C.) of 1873 has been extended, in only 25 were its provisions actually enforced. The total number of prosecutions instituted during the year was 297 with 232 convictions, against 235 with 182 convictions in 1882. The largest number

of prosecutions was instituted in the Suburbs of Calcutta and in Howrah. The result, though an improvement on that of the previous year, is still very unsatisfactory. The Lieutenant-Governor learns with regret that there appears to be generally no person appointed to detect and report evasions of the law, and that it is overlooked that the chowkidar is bound under penalty by section 6 of the Act to report every birth or death occurring in his beat to the Registrar. Ample provision is made in the law to ensure proper and effectual registration, and when the results are defective, as is found to be the case in most districts, it is evident that advantage has not been taken of this provision. The Sanitary Commissioner reports that "the views of Government on the subject, contained in paragraph 4 of the Resolution on the Annual Report for 1882, were conveyed to the Magistrates for communication to the municipalities in their districts, and quarterly statements of prosecutions instituted were called for, and are being submitted." Better results will be looked for in the next annual report.

5. Births were registered in 46 towns against 45 in 1882, the number recorded, exclusive of 1,437 children still-born, being 37,215, or a ratio of 22·08 per mille of the total population of the towns under registration, against 37,198 with a ratio of 22·65 recorded in the previous year. This apparent incongruity (increase in the number with a decrease in the ratio of births to population) is explained by the fact that the population and births of the town of Cuttack, which had no place in the statistics of 1882, are included in those of the year under review. The results recorded in the last two years are closely similar. The towns in which the best results were obtained are—

	1883	1882		1883	1882
Jamalpore in Monghyr .	49 17	4 79	Bhagulpore	33 64	37 87
Revilgunge	37 30	29 93	Brahmunberiah	33 16	35 11
Baulcora	34 93	31 47	Sitamurhi	31 34	37·22
Behar ...	34 12	32 75	Bettiah	3 47	29 11
Jamalpore in Mymensing ...	34 21	40 64	Gya	29 38	33 78
Mokamah	33 88	23 75			

In all these towns, with the exception of Bhagulpore and Gya, the birth-rate was in excess of the death-rate. The following table shows the number of births according to sex, and the proportion per cent. of male to female births :—

Sex	In 1883			In 1882		
	Number of births	Ratio per 1 000 of population.	Proportion per cent of male to female births	Number of births	Ratio per 1 000 of population	Proportion per cent of male to female births
Males	19,872	11 79	114	20,010	12 20	117
Females	17 343	10 29		17 158	10 44	

The preponderance of male births still continues to be a noticeable feature in the record of birth registration, illustrating the theory "that the proportion of male to female births is influenced by the relative ages of husband and wife, the male births increasing as the age of the husband preponderates over that of the wife, as is notably the case in India."

6. There was a considerable decrease in the number of deaths recorded in the selected areas during the year, the total, exclusive of 18,225 still-born children, being 1,245,676 against 1,349,651 recorded in 1882. Dr. Lidderdale rightly hesitates to infer that these figures afford either an absolute or a comparative gauge of the real mortality of the two years respectively. Registration, as he says, is "still lamentably defective." "It has improved so far only as to yield a return which bears a somewhat closer approximation to the true death-rate than the outcome of some former years, and to afford indications of the health condition of the people." This is certainly as much as can be said of returns which for 27 out of 45 districts give a death-rate of less than 20 per mille. It is of course beyond dispute that the number of deaths registered even in 1882 was much less than the number which occurred in 1883. It would, indeed, be reasonable

to suppose that in the case of such a disease as cholera, which is well recognized among the people, a large decrase in the number of deaths registered indicated an actual decrease of mortality from this cause : and when it is found that local reports, apart from statistical data, are to the same effect, a generally sound conclusion as regards the incidence of this malady may be arrived at. In regard to such affections as fever and bowel-complaints, however, no deduction from the registered figures is yet possible, and the general reports are the only material available for the formation of a judgment upon the condition of the public health. The Sanitary Commissioner remarks that "a larger number of the registering circles failed to record deaths at the higher rates of 20 to 50 and above per 1,000 of population. In 1882 354 of the 644 registering circles contributed to these rates; this year 307 of the 648 circles furnished them." Large omissions are traceable in most of the districts, especially in Darjeeling, Mymensingh, and the Sonthal Pergunnahs. The provisions of Act IV (B.C.) of 1873, so far as relates to the registration of deaths only, have recently been extended to that portion of the Darjeeling district which lies to the west of the Teesta river, and the result of the measure will be to secure some record of the deaths in this tract where registration has hitherto been partically ignored.

7. The proportions in which the urban and the rural circles contributed to the total number of deaths recorded during the year are as follow :—

	In 1883.		In 1882.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban	67,383	27·28	76,601	31·05
Rural	1,178,293	18·49	1,273,050	20·00
Province	1,245,676	18·82	1,349,651	20·41

These figures exhibit a diminution in both the urban and rural circles, the former to the extent of 9,218 deaths, or at 3·77 per mille of population, the latter to the extent of 94·757 deaths, or at 1·51 per mille. The following table shows the mortality during the year from specific causes as compared with that for the year 1882 and the quinquennium 1878-82:—

Name of Disease.	Proportion of deaths per 1,000 of population								
	In 1883.			In 1882.			In 1878-82.		
	Urban.	Rural.	Province.	Urban.	Rural.	Province.	Urban.	Rural.	Province.
Cholera	3·64	1·27	1·36	4·79	2·67	2·75	3·43	1·53	1·61
Small-pox	·27	·14	·14	·34	·20	·20	·80	·27	·29
Fevers	13·77	13·81	13·81	15·72	14·00	14·06	16·14	11·70	11·87
Bowel-complaints ...	3·54	·73	·83	3·93	·81	·92	4·19	·71	·85
Injury	·40	·35	·35	·88	·32	·32	·43	·32	·33
Other causes	5·64	2·18	2·30	5·80	1·98	2·12	5·87	1·64	1·80
All causes ...	27·28	18·49	18·82	31·05	20·00	20·41	30·88	16·20	16·75

Cholera, small-pox and bowel-complaints would appear to have proved less fatal in 1883 than during the entire period 1878 to 1882. Fever was, according to these figures, less severe than in 1882, though considerably more so than in the quinquennium, 1878-82. The number of reported casualties from injury and other causes was slightly higher. The statistics collected during the year "again indicate that the cold or dry season is the unhealthiest in the Province, as it is during this period that cholera, fever, and bowel-complaints cause the greatest loss to life." The recorded mortality among infants is still very high, though the recorded urban ratio 178·70 is below that of England, which is said to be 182·6. The death-rates per mille of population according to nationalities were—Christians 12·52, Hindus 18·45, Mahomedans 19·91, Bhuddists 11·84, other races 15·21. The casualties among the Bhuddists was higher than it has been during any year since 1878.

8. The birth-rate in Calcutta was below that recorded for the other Bengal towns, while the death-rate was higher, being 17·15 and 28·44 respectively, against 22·08 and 27·28. The remarks that were made on the statistics furnished in the report for 1882 apply to those contained in the present report. Owing probably to a more correct diagnosis, the death-rate

from fever is shown to be less, and the death-rate from "other causes" to be greater in Calcutta than in the other Bengal towns. The average mortality in the cantonments in Bengal, with a population of 33,991, rose from 13·35 per mile in 1882 to 21·50 per mille in the year under review, the chief cause of death being fever. The death-rate was highest in the Hazaribagh Cantonment. Only one death took place in Fort William. Of 21,005 European seaman who visited the Port during the year, 1,948 were admitted into hospital, of whom 81 died. There were 10 casualties besides, which occurred out of hospital. The death-rate was less than in the previous year, being 48·92 per mille against 55·80. The number of deaths among the native floating population was 178 against 186, or at the rate of 7 per mille against 7·32 in the previous year, cholera being the chief cause of death. The Native Inspector, who has been appointed to surpervise the floating population, is reported to have done his best to trace cases of sickness, and get them removed to hospital. In alluding to the healthiness of the Port during the year, the Sanitary Commissioner records the following remark, which the Lieutenant-Governor gladly reproduces: "On the whole, therefore, the year under review must be pronounced to have been a healthy one, which is a matter for congratulation, and indicative of the care and attention bestowed by the Health Officer on the sanitation of the Port."

9. Unlike the year 1882, the most prominent feature in the sanitary report for the Province during 1883 was the decrease in the registered mortality from cholera in both urban and rural circles. "The disease was present in all the 648 registering circles in the Province excepting 46, prevailing epidemically in only 47 against 115 in 1882, severely in 64 against 118, and mildly in 491 against 376, and it attacked only 6·55 per cent. of the villages against 10·98 per cent. The casualties amounted to 90,439, and the death-rate to 1·36 per 1,000 of population, the reduction on the figures of 1882 being 91,913 deaths, or at 1·39 per 1,000, and on the average of the lustrum, 1878-82, 16,107 deaths, or at ·25 per 1,000." The following statement shows the comparative registered mortality from cholera in urban and rural circles :—

	In 1883.		In 1882.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban circles	8,993	3·64	11,830	4·79
Rural "	81,446	1·27	170,552	2·67

The districts which would appear to have suffered most were Nuddea (4·69), Julpaiguri (4·17), Gya (3·73), 24-Pergunnahs (3·47), Shahabad (3·24), Howrah (3·00), Backergunge (2·40), Jessore (2·21), Darjeeling (2·12), Balasore (2·12), and Cuttack (1·95). A noticeable feature in the cholera history of the year is the progress of the disease in the Darjeeling district. "Commencing in the Terai, the disease spread over the whole district with epidemic virulence, excepting the large hill tract east of the Teesta and several villages west of that river. Localities which had not been visited since 1877 were invaded this year; tea-gardens and other places further in the hills than Darjeeling were attacked; plains and hills were both affected; the Darjeeling Municipality at an elevation of over 7,000 feet did not entirely escape." The recorded death-rate, which is believed to have been considerably under-stated, was 2·12 as stated above against ·35 per mille in 1882. The disease was most severe in the dry and hot months of April, May, and June, and as usual subsided during the rains. The reports of the year continue to show that the disease, however propagated, is "fostered by the filthy habits and overcrowding of the population." Some attempt was made by the Civil Surgeon of Gya to discover the etiology of the disease, which broke out simultaneously in many parts of that district with unusual virulence; but although he visited many of the affected localities, his enquiries led to no satisfactory result. The conclusion he arrived at was "that the disease spread irrespective of lines of traffic, and that the prevailing winds did not influence its course." In no instance was the disease traced by him to importation. The subject of the origin and propagation of cholera is attracting much attention at present in consequence of the important discoveries which are thought to have been made by Dr. Koch and the German Cholera Commission. The Government of India have resolved to institute special enquiries, and have deputed for this purpose Dr. D. D. Cunningham, an officer of exceptional qualifications. Instances were brought

to notice in which cholera was imported by coolies on their way to Assam, the medical arrangements for their charge being defective. Measures are being taken to ensure a more efficient supervision in future; and at Mugra, in the district of Hooghly, through which large numbers of coolies pass during the first half of the year, arrangements have been made to provide for their medical inspection and treatment when sick. It is not, however, possible, in the present state of the law, to enforce sanitary regulations in the case of free labourers. The conduct of the Nawab Bahadoor of Moorshedabad, and of the Rajah of Deo, and Zemindars Sham Lall Mitter and Nundo Lall Bose of Gya, in affording medical relief to the cholera-stricken among their tenantry, is highly commendable.

The attention of the Suburban Municipality was drawn to the remarks made in the last report on the condition of certain bustees in the suburbs, and the Commissioner and Magistrate of the district were requested to give their personal attention to the matter. The Lieutenant-Governor has also recently called for a report on the condition of the bustees near Cossipore. During the year the Lieutenant-Governor announced his intention of relieving the Municipality of a charge of Rs. 38,000 a year on account of police to assist the Commissioners in making adequate provision for the extension of filtered water to the suburbs. A portion of the funds thus set free was also to be devoted to the sanitary improvement of the Municipality. The whole question of the measures to be taken for the reform of the suburban bustees is under consideration.

10. Small-pox played a comparatively minor part during the year under review, the recorded number of deaths from that disease being 9,714, or a ratio of ·14 per mille of population, against 13,651, or a ratio of ·20 in the previous year. With the exception of the years 1875 and 1877, when the number of deaths recorded was 5,280 and 8,088 respectively, the mortality from small-pox in 1883 was lower than that of any year of the preceding decade. It is hoped that still better results will ensue as the value of vaccination becomes more generally known and appreciated. The disease prevailed with more or less severity in 30 circles against 33 in 1882, and was absent from 284 against 280. The proportions in which the urban and rural circles contributed to the total mortality are as follow :—

	In 1883.		In 1882.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban circles	672	·27	853	·34
Rural "	9,[illegible]42	·14	12,798	·20

The disease was found to be specially prevalent during the hot months of March to June. The largest number of casualties occurred among infants and children under 12 years of age, the proportion of deaths among them to total deaths being 71·04. The districts which suffered most were Cuttack (1,570), Pooree (841), Chumparun (657), and Mymensingh (643). Bogra was the only district in Bengal which enjoyed perfect immunity from the disease throughout the year.

11. The total registered mortality from fever was 913,766, the death-rate being 13·81 per mille of the population under registration, against 929,943 with a death-rate of 14·06 per mille in 1882, showing a reduction of 16,177 in the number of deaths, and of ·25 per mille in the death-rate. The comparative mortality registered in urban and rural circles during the last two years is shown in the following statement:—

	In 1883.		In 1882.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban circles	34,025	13·77	38,792	15·72
Rural "	879,741	13·81	891,151	14

The seasonal incidence of fever, as illustrated by the mortuary statistics recorded during the year, again shows that the disease is most fatal in the cold weather after the rains have ceased, especially during the months of November and December "when the sodden soil is rapidly drying, and there is a great daily range of temperature." As in the previous year, the disease was most virulent in the Burdwan, Presidency, and Rajshahye Divisions.

The districts which suffered most, and the mortality recorded in each, compared with the figures for the previous year, are given in the subjoined table:—

Districts.	In 1883 Deaths	In 1883 Ratio per mille	In 1882. Deaths.	In 1882. Ratio per mille
Rajshahye	40,331	30.12	32,450	24.24
Nuddea	45,705	27.[illegible]0	60,912	30.50
Burdwan	32,502	23.35	40,173	28.86
Jessore	41,882	23.14	34,[illegible]9[illegible]	22.93
Pubna ...	29,43[illegible]	22.43	23,575	17.97
Beerbhoom	17,698	22.27	21,945	27.62
Moorshedabad ...	2[illegible],734	21.79	31,921	26.01
Bogra ...	11,181	19.31	14,487	19.72
Khulna ...	18,941	17.53	20,144	18.65
Dinagepore ...	26,014	17.17	23,618	15.61

These figures indicate a diminution in the fatality of the disease in nearly all the districts named, the exceptions being Rajshahye, Jessore, Pubna and Dinagepore. In Rajshahye, where the public health has been gradually deteriorating, the chief cause of suffering is attributed to a deficient and vitiated water-supply. The remarks of the Civil Surgeon on the subject will be brought to the notice of the Commissioner of the Division It is satisfactory to see that the virulence of both the Burdwan and the Nuddea fevers is diminishing, the former at a rapid rate. There are, however, signs that it is spreading into adjoining districts, such as the Sonthal Pergunnahs, which have hitherto enjoyed a happy and remarkable immunity. Of the local enquiries instituted into the cause of fever in the various districts of the Province, mention is made in particular of the enquiry made by Dr. Ghose, Civil Surgeon of Bankoora, which has led him to form the opinion that "soil moisture is not *per se* the cause of fever, but that so long as the contagion, whatever it might be, was not introduced either by human agency or from village to village by the wind, the humidity of the soil did no harm, but the contagion once falling on congenial ground multiplied in abundance, in proportion to the soil moisture, and caused the disease. Where the moisture in the soil, owing to the proximity of a marsh, is perennially damp, there the fever prevails the most." The Civil Surgeon of Maldah remarks that "groups of people congregated thickly together in villages surrounded by soil sodden and saturated by the excremental discharges of years little or no ventilation, air poisoned by the miasmatic exhalations of decaying animal and vegetable debris, and water rendered impure by nature and art, are all quite sufficient to account for the spread, if not the origin, of disease in an Indian village" · Only four deaths occurred from fever among European seamen in the Port of Calcutta, although the number of cases admitted in hospital exceeded that of the previous year, being 323 against 251. This is chiefly owing to the absence from the Port of enteric fever during the year. There was a decline also in the mortality from fever among the native floating population, the recorded number of deaths being 22 against 26 in the previous year.

12. Under the heads of "Bowel-complaints," "Injury," and "Other diseases," the recorded mortality during the year stands at 55,270, 23,670, and 152,817, respectively Compared with the figures of the previous year, there was a decrease of 6,092 in the number of deaths from "Bowel-complaints," and an increase of 2,059 and 12,085 respectively in the casualties from "Injury" and "Other diseases." Under "Injury" the largest proportion of deaths was caused by snake-bite and attacks of wild beasts. Referring to the statistics indicating the seasonal incidence of bowel-complaints, the Sanitary Commissioner observes "that the morning and evening damps and chills and great alternations of temperature of July, August, and September, and the extreme cold night air and heavy dews of January, November, and December, cause large numbers of the poor, insufficiently clad, and poorly fed portion of the population to succumb to the influence of these maladies. To these causes may be added errors of diet, bad water, and malaria as aids to the propagation of the diseases"

13. Considerable progress was made by the Vaccination Department during the year. The operations of the Government vaccinators were extended for the first time to three thannas in the Monghyr district, seven thannas in the

Tipperah district, six thannas in the Chumparun district, two thannas in Shahabad and a portion of Jehanabad in the district of Gya. The area thus protected for the first time occupies 6,179 square miles, and contains a population of 3,800,888. On the other hand, five thannas in the Purneah district, seven thannas in the Maldah district, and three thannas in the district of Bhagulpore, which cover an area of 4,416 square miles, and contain a total population of 1,916,568, were for the first time placed under the licensed system of vaccination. The whole of the Darjeeling Circle, with the exception of the hill tracts, is now vaccinated by licensed agency. In addition to the areas dealt with in former years, the areas which were thoroughly protected at the close of the season 1883-84 comprised 37,969 square miles, with a total population of 15,014,069. The circles in which the largest areas were brought under protection were Ranchi and Eastern Bengal. The following table shows the recorded number of operations performed during the year:—

CIRCLES.	Total number of vaccinations performed		Difference in 1883-84.	
	* In 1883-84.	In 1882-83.	Increase.	Decrease.
Calcutta	9,538	11,373	...	1,835
Metropolitan circles	342,543	344,178	...	1,635
Suburbs of Calcutta, including Cooly Depôts	14,397	15,152	...	755
Total of Metropolitan Circles ...	356,940	359,330	...	2,390
Darjeeling Circle	221,536	282,291	...	60,755
Ranchi „	146,283	110,893	35,390	...
Sonthal Pergunnahs „	106,985	134,571	...	27,586
Eastern Bengal „	351,016	212,518	108,498	...
Orissa „	52,542	43,858	8,684	...
Behar „	39,627	17,487	22,140	...
Total of Vaccination Circles ...	1,234,467	1,202,321	82,146	...
Municipalities, Dispenseries, &c. ...	76,865	59,104	17,761	...
GRAND TOTAL ...	1,361,332	1,261,425	99,907	

* Inclusive of 10,780 repetition cases in the vaccination circles and 139 in the municipal area, aggregating 10,919.

These figures do not include the number of operations performed at the Inland Emigration Cooly Depôts for the six months ending December 1883, nor do they include the work done by 32 of the vaccinators in the Eastern Bengal Circle, whose returns were received by the Superintendent after his annual statements had been closed. Nevertheless they exhibit a satisfactory increase in the number of operations performed both in the vaccination circles and in the municipal area. The large decrease in the Darjeeling Circle is accounted for in "the change from Government to licensed agency operations in Maldah and Purneah, the Government agency on the hills having returned an excess of 6,929 operations. It is also attributed to the difficulty of securing subjects to serve as vaccinifers, which prevented the more vigorous pushing on of operations in Bogra, Rajshahye, and Rungpore, and to some extent to opposition to vaccination in the two first-named districts." The reasons given for the falling off in the number of vaccinations in the Sonthal Pergunnahs Circle are not at all satisfactory, and only tend to show the laxity which prevails in the supervision of the vaccinating establishment in this circle. Now that a separate Superintendent has been appointed, it is hoped that a substantial improvement will follow.

14. The number of successful operations performed during the year in the vaccination circles and the municipal area combined was 1,329,828 against 1,229,058 in 1882-83, the percentage of successful primary cases being 98·66 against 98·60, and of secondary cases 49·42 against 45·12. A higher standard of success was returned by the Calcutta, Metropolitan, Darjeeling, Sonthal Pergunnahs, and Eastern Bengal Circles than by the Ranchi, Behar, and Orissa Circles. There was an improvement also in the number of successful

primary operations in the municipal area. Of 1,261,771 persons who were successfully vaccinated in the vaccination circles during the year, 1,275,750 were under one year of age, 836,258 were between one and six years, and 259,077 were above six years. In the municipal area the general results are found to accord with those common to the majority of the vaccination circles. It is supposed that "the main reason why a larger ratio of protection is seen among children above one and under six years of age than among infants is that parents or guardians (particularly mothers) greatly fear to expose children of tender age to vaccination, which is considered to be attended with much risk" The following is a comparative statement of the amount and value of the work performed by the Government and licensed agencies:—

Agencies	Circles in which employed	Number of vaccinators employed	Total number vaccinated during the year	Primary Vaccination: Total	Primary Vaccination: Successful: Under one year	Primary Vaccination: Successful: One year and under six years	Primary Vaccination: Successful: Above six years	Primary Vaccination: Successful: Total at all ages	Re-vaccination: Total	Re-vaccination: Successful: Under one year	Re-vaccination: Successful: One year and under six years	Re-vaccination: Successful: Above six years	Re-vaccination: Successful: Total at all ages	Percentage of successful cases: Primary	Percentage of successful cases: Re-vaccination	Average number of persons vaccinated by each vaccinator	Proportion of persons successfully vaccinated per 1,000 of population
Licensed agency	Metropolitan, Darjeeling, Ranchi, Sonthal Pergunnahs and Eastern Bengal	972	893 056	890 198	124,073	607 304	145,797	877 714	2 86	8	264	2,026	2,298	98 81	82 15	938	19 1
Government agency	Calcutta, Suburbs of Calcutta, Darjeeling, Ranchi, Sonthal Pergunnahs, Eastern Bengal, Orissa and Behar	323	291 112	385 500	41 710	228 405	110 071	380,186	5 904	45	285	1,243	1,573	99 08	29 50	1 204	8 2

The work performed by the licensed agency was considerably better than that performed by the Government agency. The number of operations performed by each licensed vaccinator was, however, less than that performed by the Government vaccinators. The relative proportions of the various classes vaccinated to the total number of vaccinations were:—

	Percentage of total vaccinations.
Christians ...	·32
Hindus ...	56 87
Mahomedans	38 35
Others ...	4 44

15. The public feeling in regard to vaccination continues to grow in favour of the measure, though opposition is still exhibited in every circle. "The most backward districts are Hazaribagh, the Kolhan portion of Singbhoom, Monghyr, and the districts comprising the Behar and Orissa Circles, excepting Patna in the former circle—the stoutest opponents are the higher classes of Hindus, the Marwaris, and the Mahomedan Ferazees—and the chief causes of aversion to the measure are objections based on religious grounds; leading members of communities setting a bad example and inciting the lower classes to resistance, the females having a strong objection to the measure, while the males are unable to set aside their entreaties; unwillingness to part with the virus from the arm; objection to arm-to-arm vaccination; bad vaccination engendering disbelief in the protective powers of the prophylactic." The Lieutenant-Governor learns with satisfaction that considerable assistance was afforded by many of the District and Sub-divisional Officers, and by a few private individuals, in promoting the cause of vaccination. The Commissioner of Orissa will be asked to report further on the statement that "the Magistrates of Cuttack, Balasore, and Pooree, although asked, declined to render assistance on the ground that vaccination is not compulsory." The Lieutenant-Governor desires to be further informed of the proceedings of the Sub-divisional Officer of Bagirhat, who refused to see the Deputy Superintendent of Vaccination on the ground of being otherwise engaged.

16. The Compulsory Vaccination Act, V (B.C.) of 1880, was extended during the year to the places mentioned below:—

Burdwan District—
Burdwan town.
Ranigunge „
Kalna „
Dainhat „
Cutwa „
Bankura District—
Bankura town.
Bishenpore „
Midnapore District—
Midnapore town.
Kheerpai „
Ghatal „
Chundrakona „
Ramjibanpore „
Tamlook „
Hugli District—
Bhuddesher town.
Bansbaria „
Bydobati town.
Kotrung „
Serampore „
Utterpara „
24-Pergunnahs District—
North Suburban or Baranagur town.
South Suburban town.
Rajpore „
Barripore „
Joynagar „
South Dum-Dum „
North ditto „ including cantonment
South Barrackpore town, including Cantonment.
North Barrackpore town.
Baraset town.
Naihati „
Basirhat town.
Taki „
Baduria „
Gobardanga „
Nuddea District—
Krishnagar town
Santipore „
Ranaghat „
Nuddea „
Kushtea „
Meherpore „
Birnaggar „
Kumarkholi „
Jessore District—
Jessore town.
Mohespore „
Kotechandpore „
Khulna District—
Satkhira town.
Chanduria town.
Debhata „
Murshedabad District—
Berhampore town, including Cantonment.
Lalbagh town.
Kandi „
Jangipore „
Maldah District—
English Bazar town.
Cuttack District—
Cuttack Cantonment.
Bhagulpore District—
Bhagulpore town.
Kolgong „
Bhagulpore thana.
Kumargunge „
Kolgong „
Bihipore „

The reports of the year show that the law was introduced into the places named without much opposition, and was found to work satisfactorily. Both the Civil Surgeon of Midnapore and the Cantonment Magistrate of Dum-Dum consider the existing law to be defective in so far as it does not give the local authorities absolute power in the enforcement of its provisions. The Act continued to work smoothly in all the places to which it had been previously extended, with a few exceptions, principal among which was the town of Gya, where the wealthy class of Hindus and the priests of the old town of Gya were the most determined opponents. Six hundred persons were prosecuted for resistance, and of this number 36 were fined Rs. 105-8, the rest being discharged with a warning, which had a wholesome effect. The fees realized during the year from home vaccination, which was carried on in addition to depôt vaccination, were—in Gya Rs. 153-4, in Monghyr Rs. 111-8, and in Jamalpore Rs. 25-8. Notwithstanding the measures taken to prohibit the practice of inoculation, it was found to have been carried on clandestinely in many parts of the Province, and much of the good effected by vaccination was thereby counteracted. The protection afforded by vaccination against small-pox is again proved by the results of the past year, which show that, while the mortality from small-pox in the areas *unprotected* by vaccination stood as high as ·25 per 1,000 of population, it amounted in the *fairly well protected* areas to only ·17 per 1,000, and in the *thoroughly protected* areas to the still lower ratio of ·07 per 1,000.

17. The principal feature in the history of vaccination during the year was the great increase in the use of bovine lymph. Experiments were freely made throughout the Province, and the results were generally as successful as those achieved by the use of humanized lymph. Its efficacy was found to be greater when used direct from the calf than when transmitted in tubes. The following opinion is recorded by Dr Gupta, whose experiments with the bovine virus in Calcutta were well conducted :—"Whenever lymph, direct from the calf, was used, success was certain : so with good lymph in tubes and used by skilful operators. In cases of failure the causes of non-success were the mixture of serum, blood, and other impurities. In such the lymph is generally coagulated, and comes out like a thread from the tube. That the bovine lymph seems more potent appears from the following facts. The fever is stronger and sets in earlier. The swellings and irritation of lymphatic glands are always greater, and, sometimes, where humanized virus had failed, bovine lymph has succeeded. In the districts (comprising the Metropolitan Circle) the inspectors and vaccinators remarked that the virus was stronger and never degenerated and died out as in former years. In persons who were inoculated during childhood, the bovine lymph has been successful. In re-vaccination cases with calf lymph the percentage of success is much higher than with humanized lymph. Bovine lymph possesses another great advantage over humanized virus, viz, that we always have a plentiful supply whereby we can meet any sudden demand." Vaccination with bovine lymph is now greatly appreciated, especially by the Christian community.

It is said that the demands for it during the year were so numerous that the establishment was barely able to cope with them. In no less than 1,352 instances the calf was required to be taken for vaccination to the houses of private persons, and a proposal is now made to charge a fee in such cases in order to meet the expenditure involved. The Sanitary Commissioner considers that it is fully time that the bovine vaccination scheme should be made a permanent institution, and the Lieutenant-Governor will be glad to consider any specific proposals that may be made with this object.

18. The total expenditure on vaccination during the year amounted to Rs. 1,31,274-1-4 against Rs. 1,24,083-12-6, the total expenditure in the previous year, exhibiting an increase of Rs. 7,190-4-10. Of the total expenditure, Rs. 58,518-2-9 represents the cost of the operations conducted by the Government establishment, Rs. 63,910-3-8 that of the establishment provided by Government for supervising the operations of the licensed vaccinators, and Rs. 8,845-10-11 the cost of vaccination to municipalities. In addition to the regular expenditure, several sums received as private contributions were expended in aid of the work. The cost of each successful operation performed by the Government agency was 2 annas $5\frac{1}{3}$ pies, and that by the licensed agency 1 anna $1\frac{3}{4}$ pies, aggregating 1 anna $6\frac{1}{2}$ pies for both departments, or $\frac{1}{4}$ pie less than the aggregate of the previous year.

19. The percentage of municipal income which was expended on sanitary works during the year was 34 against 31 in the previous year, and on roads it was 18, the same as in 1882. The following table shows the special purposes for which the amount allotted for the sanitation of towns was expended.

Nature of Work.	Total Cost.		Difference in 1883.	
	In 1883.	In 1882.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Conservancy, including latrines ...	3,07,951	2,61,509	46,412	......
Ditto establishment	3,25,860	3,12,757	13,103	......
Drainage	96,097	1,36,775	......	40,678
Water-supply	1,60,449	31,092	1,29,357	......
Disposal of the dead	7,629	6,917	712	......
Markets and slaughter-houses ...	16.533	14.170	2,363	......
Vaccination	10,992	12,018	......	1,506
Treatment of the sick	1,69,339	1,24,993	44,346	......
Other sanitary works	53,080	55,168	......	2,088
Total ...	11,47,930	9,55,429	1,92,501	43,822
Construction, maintenance, and repair of roads	6,06,160	5,70,200	35,960	......
Total, including roads ...	17,54,090	15,25,629	2,28,461	43,822

The large increase under the head of water-supply was chiefly owing to the expenditure on the Burdwan water-supply scheme, which amounted to Rs. 1,10,519; to the extension of the Darjeeling water-supply to Kurseong at a cost of Rs. 10,523; and to the improvement of defects in the water-works at Dacca, which cost Rs. 2,638. The districts in which the largest proportion of municipal income was devoted to sanitation were Julpigoree, Rungpore, Sonthal Pergunnahs, Hazaribagh, and Burdwan. Those in which less than an equitable share of municipal income was expended on sanitary improvements were Khoolna, Mymensingh, Noakholly, and Chittagong.

20. Schemes for the improvement of drainage were inaugurated, and in most cases taken in hand in Serampore, Ghattal, Berhampore, Lalbagh, Azimgunge, Dinagepore, Chittagong, and English Bazar in Maldah. Some progress was made in the Cuttack drainage scheme, which was commenced in 1879. Obstructions to drainage were removed in Nuddea, Moorshedabad, and Dinagepore. In the Sonthal Pergunnahs, a survey of the great swamp to the south of Rajmehal, which is a source of much disease, was made with a view to improve its drainage. Since the close of the year a report has been submitted on this subject, but as it appeared to the Lieutenant-Governor that the efforts made by the local landholders, who would be the chief gainers, were quite inadequate, he declined to grant any assistance from Provincial funds. Much progress was made during the year towards the completion of the Burdwan water-supply scheme, and some good work was done in improving the water-supply in the towns of Berhampore, Dacca,

English Bazar, and Kurseong. A Bill to provide for the extension of the Calcutta water-supply to the Suburbs has been introduced in the Legislative Council, and it is hoped that, in the course of the current year, material progress will be made with the works. A scheme has also been proposed to provide a supply of filtered water for all the riparian municipalities on the right bank of the Hooghly, from Howrah to Serampore. The difficulties in the way of carrying this into effect have been found more considerable than was anticipated, and some delay is likely to ensue before the details are worked out. The Lieutenant-Governor, however, attaches a high degree of importance to it, and he would be very reluctant to admit that the obstacles are altogether insuperable. Every assistance that can legitimately be given will be rendered, and it is hoped that before long some feasible solution will be discovered. Meanwhile the proposal is under the consideration of Government.

21. The Lieutenant-Governor is again compelled to notice unfavourably the comparatively small amount of sanitary work done by officers of the Department. This subject was prominently alluded to in the Resolution recorded last year, and in view of the instructions then issued by the Sanitary Commissioner, and the remarks made by Government, it was hoped that the records of the year under review would show a marked improvement in this respect. Some slight advance there is, but much less than the Lieutenant-Governor considers he has a right to expect. It should be distinctly understood that the primary duties of the department under the Sanitary Commissioner are of a sanitary nature. Vaccination is merely one branch of a subject which embraces all matters affecting the public health. There has been in the past a marked tendency on the part of the Sanitary Department to magnify its vaccination duties at the expense of those of a more general character. It was to check this tendency that the Lieutenant-Governor desired the Sanitary Commissioner to prescribe forms of diaries and to lay down rules to secure a greater amount of attention to sanitary work proper. It is therefore disappointing to find in a Report, which, exclusive of appendices and figured statements, extends to 107 printed pages, only six pages devoted to this subject. The Lieutenant-Governor is aware that Dr. Lidderdale resumed charge of the office of Sanitary Commissioner only a few days before the close of the year to which the Report relates, and he is therefore not responsible to a great extent for the shortcomings in question. Mr. Rivers Thompson trusts that the Sanitary Commissioner will now take such measures as will ensure that in the current year the disproportionate division of the attention of his Department between the several branches of their work may be thoroughly rectified.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal.

No. 867.

Copy forwarded to the Sanitary Commissioner, Bengal, for information and guidance.

No. 868.

Copy, with a copy of the Report, forwarded to the Surgeon-General, Bengal, for information.

No. 869.

Copy, with a copy of the Report, submitted to the Government of India, in the Home Department, for information.

No. 870.

Copy, with a copy of the Report, forwarded to the Commissioner of Rajshahye, with special reference to paragraph 11.

No. 871.

Copy, with a copy of the Report, forwarded to the Commissioner of Orissa, with special reference to paragraph 15.

Circular No. 11.

Copy, with a copy of the Report, forwarded to all Commissioners of Divisions (except Rajshahye and Orissa) for information, and for communication to District Officers.

By order of the Lieutenant-Governor of Bengal,

COLMAN MACAULAY,

Secretary to the Government of Bengal.

Calcutta,
The 15*th August* 1884.

C. S. G. and W. J.—Reg. No. 5451C—736—16-8-84.

SEVENTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL

FOR THE YEAR 1884.

INCLUDING THE ANNUAL REPORT ON VACCINATION IN BENGAL FOR THE YEAR 1884-85.

BY

DEPUTY SURGEON-GENERAL R. LIDDERDALE, M.D.,

Sanitary Commissioner for Bengal.

Calcutta:

BENGAL SECRETARIAT PRESS.

1885.

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SEVENTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL.

YEAR 1884.

SECTIONS I, II, III, & IV.

THE information required under these Sections will, as usual, be submitted in the Imperial Sanitary Commissioner's Report, and is consequently omitted from this Report.

SECTION V.

VITAL STATISTICS.

Statistics dealt with in this Section.

2. This Section deals with particulars connected with the birth statistics of 47 principal towns, and the death statistics of the entire Province for the year 1884.

REGISTRATION. Value of—in 1884.

3. The general results of Birth and Death registration during the year under review are exhibited in the subjoined tables:—

BIRTHS.

Districts.	Number of towns in each district in which Births were registered.	Number of Births registered in 1884.	Ratio of Births per 1,000 of Population in 1884.	Increase or decrease as compared with 1883.	Ratio of male Births to every 100 female Births.
1. Chumparun ...	1	748	35·17	4·70 *I*	108
2. Mymensing ...	1	555	34·40	·25 *I*	115
3. Bhagulpore ...	1	1,947	33·98	·24 *I*	110
4. Tipperah ...	2	1,003	32·30	1·10 *I*	110
5. Serampore ...	2	960	29·99	4·25 *I*	133
6. Durbhunga ...	1	1,955	29·57	5·25 *I*	105
7. Gya ...	1	2,239	29·41	·03 *I*	105
8. Howrah ...	2	2,789	26·40	7·93 *I*	127
9. Manbhum ...	1	250	26·87	13·44 *I*	95
10. Monghyr ...	3	2,231	26·68	3·92 *I*	118
11. 24-Pergunnahs	2	6,418	23·00	3·16 *I*	113
12. Bankura ...	2	1,220	23·17	5·55 *D*	119
13. Hughli ...	1	884	22·82	2·11 *I*	122
14. Midnapore ...	1	716	21·83	5·90 *I*	112
15. Sarun ...	2	1,386	21·08	5·43 *D*	123
16. Patna ...	5	5,636	21·06	1·83 *D*	118
17. Chittagong ...	1	455	20·58	1·35 *D*	120
18. Mozufferpore	2	1,001	20·49	3·35 *I*	136
19. Nuddea ...	3	1,347	20·45	2·69 *I*	112
20. Dacca ...	1	1,570	19·58	·99 *D*	115
21. Cuttack ...	3	1,286	18·32	4·89 *I*	115
22. Poori ...	1	436	17·59	·15 *D*	108
23. Purneah ...	1	263	17·51	5·53 *I*	122
24. Shahabad ...	1	723	16·63	11·92 *D*	112
25. Burdwan ...	1	882	15·77	12·57 *D*	116
26. Faridpore ...	1	141	13·78	3·41 *I*	143
27. Rajshahye ...	1	271	13·69	2·37 *I*	113
28. Jessore ...	1	94	11·06	1·41 *I*	176
29 Lohardugga ...	1	168	9·10	8·14 *D*	121
30. Darjiling ...	1	66	8·27	1·87 *I*	214
Total of 1884 ...	47	39,040	23·51	......	116
Total of 1883 ...	46	37,215	22·08	......	114
Difference ...	1 *I*	2,425 *I*	1·43 *I*	......	2 *I*

DEATHS.

Districts.	Number of Deaths registered in 1884.	Ratio of Deaths per 1,000 of Population in 1884.	Increase or decrease as compared with 1883.	Ratio of male Deaths to every 100 female Deaths.
1. Nuddea ...	65,580	39·60	3·53 *I*	125
2. Rajshahye ...	48,854	36·49	3·63 *I*	120
3 Pubna ...	42,546	32·43	7·93 *I*	115
4 Balasore ...	26,545	28·09	6·25 *I*	108
5. Backergunge	52,016	27·83	4·03 *I*	110
6. Jessore ...	53,165	27·41	·37 *I*	122
7. Murshidabad	33,100	26·08	2·51 *I*	122
8. Gya	56,937	26·79	5·65 *I*	110
9. Birbhum ...	20,668	26·01	·04 *I*	103
10. Patna ...	44,269	25·19	3·21 *I*	113
11. Bogra ...	18,341	24·97	3·34 *I*	119
12. Khulna ...	20,089	24·71	3·86 *I*	114
13. Burdwan .	33,198	23·85	4·23 *D*	115
14. Dacca ...	49,457	23·36	3·78 *I*	116
15. Poori	20,516	23·09	2·81 *I*	105
16. 24-Pergunnahs	43,102	23·05	·07 *D*	129
17. Noakholli ...	18,142	22·10	4·67 *I*	107
18. Sarun ..	49,971	21·91	6·58 *I*	125
19. Bhagulpore ...	42,598	21·64	3·90 *I*	114
20. Cuttack ..	38,616	21·52	5·01 *I*	107
21. Hazaribagh ..	23,433	21·21	4·11 *I*	114
22. Hughli ...	13,486	20·33	1·16 *D*	108
23. Midnapore ...	50,773	20·18	·41 *D*	116
24. Serampore ...	6,936	19·70	2·83 *I*	119
25. Julpaiguri ...	11,391	19·58	·08 *I*	130
26. Howrah ...	12,357	19·44	·33 *I*	126
27. Faridpore ...	31,164	19·09	6·33 *I*	121
28. Rungpore ...	39,568	18·86	·72 *I*	125
29. Chumparun ..	31,643	18·37	9·49 *I*	123
30. Maldah ...	13,044	18·36	·29 *I*	130
31. Bankura ...	19,033	18·27	2·00 *D*	116
32. Dinagepore ...	26,697	17·62	1·39 *D*	144
33. Purneah ...	31,520	17·04	·54 *D*	136
34. Shahabad ...	32,837	16·71	2·08 *D*	117
35. Tipperah ...	25,190	16·57	2·39 *I*	115
36. Monghyr ...	31,573	16·02	6·00 *I*	117
37. Singbhum ...	8,896	15·83	1·67 *I*	123
38. Sonthal Pergunnahs.	24,343	15·52	3·00 *I*	133
39. Manbhum ...	16,297	15·40	2·54 *I*	124
40. Chittagong ...	17,084	15·08	·84 *I*	114
41. Lohardugga...	24,033	14·93	1·66 *D*	116
42. Mymensing	39,223	12·85	1·11 *I*	125
43. Darjiling ...	2,000	12·80	1·69 *I*	154
44. Mozufferpore	32,053	12·41	·57 *D*	126
45. Durbhunga ...	28,796	10·93	2·57 *D*	118
Total of 1884 ...	13,78,610	20·83	......	119
Total of 1883 ...	12,45,676	18·82	......	118
Difference ...	1,32,934 *I*	2·01 *I*	......	1 *I*

	Number of Circles in which Deaths from *All Causes* were registered at—						
	50 and above per mille.	40 to 50 per mille.	30 to 40 per mille.	20 to 30 per mille.	15 to 20 per mille.	10 to 15 per mille.	Under 10. per mille.
In 1884	4	25	71	271	172	92	14
In 1883	2	19	80	206	189	119	33

The inferences to be drawn from the figures for the year under review in comparison with those for the preceding year, as submitted in the above tables, are:—

(1) That there was an advance in Birth registration in the towns in which the events were recorded, viz., to the extent of 2,425 additional births registered, or at the rate of 1·43 per 1,000 of population.

(2) That to this advance all the 47 towns, excepting 15, contributed.

(3) That a very considerable improvement in death registration was effected in the Province, represented by the increase of 1,32,934 in the number of deaths recorded, or at 2·01 per 1,000 of the population under registration.

(4) That all the 45 districts, excepting 11, produced this improvement.

(5) That a larger number of circles, 371 against 307, recorded deaths at the superior rates of 20 and above per 1,000 of population.

(*Lastly*) That compared with the results of all past years registration was best carried out during the year under review, inasmuch as its recorded events rose to 1,378,610 from 983,400 in 1876, when a sudden and most marked advance was effected in comparison with preceding years since the scheme was inaugurated, *vide* marginal figures.

	Deaths.
1884	1,378,610
1876	983,400
1877	1,077,601
1878	1,064,116
1879	950,881
1880	922,633
1881	1,255,178
1882	1,349,651
1883	1,245,676

This very general improvement in registration is attributed in most of the local reports to special attention having been bestowed this year to the subject. This assertion is supported by the facts (1) that while there was no unusual *general epidemic* prevalence of sickness, the number of deaths recorded under *every* head of disease, was larger than those in the preceding year, or even during the preceding quinquennium 1879-83, small-pox excepted, *vide* figures in the margin; and (2) that this increase has been recorded against the fact, as gathered from some of the local reports, that many deaths were unreported owing to chowkidars having left their villages to seek a livelihood elsewhere, by other labour, in consequence of high prices of food-grains caused by deficient rainfall having injured the crops. As high prices for provisions obtained generally almost throughout the Province, the desertion of chowkidars may have been more general and registration suffered to a greater extent than reported.

	1884.	1883.	Average of 1879-83.
Cholera ...	1,34,421	90,439	1,05,595
Small-pox ...	18,533	9,714	18,706
Fever ...	9,66,233	9,13,766	8,19,297
Bowel complaints ...	58,376	55,270	54,173
Injury ...	21,674	23,670	22,221
Other causes ...	1,76,373	1,52,817	1,24,870

Special measures adopted locally to improve Registration.

4. A brief resumé of some well meant endeavours to promote registration made by local officers during the year is subjoined.

Midnapore.—The measures taken in hand in the Midnapore town to improve registration by a full utilization of the Compulsory Registration Act, alluded to in the last Annual Report, continued in operation this year, and are said to be working satisfactorily. The Civil Surgeon personally lent assistance to the scheme by reporting every event he heard of, himself or through the Sanitary Inspector of the town. The result was an improvement in registration, as the recorded death-rate amounts to 31·22 per 1,000 of population, against 27·56 per 1,000 in the preceding year; but it should be mentioned that the cholera mortality was higher, 5·89 per 1,000 as against 1·46 per 1,000 in 1883. In the Ghattal Municipality the tax-collectors were made to render aid in the work of

registration with improved results. With regard to registration in the towns in the Sub-division of Ghattal, the sub-divisional officer notes :—" It can be confidently stated that the number of deaths shown to have occurred in each Municipality correctly represents the actual number of deaths in each, as the figures supplied by the registration agencies were generally found correct on enquiries held by the Vice-Chairmen of the several Municipalities." When, however, it is considered that the death-rates amounted in the Ramjibunpore town to only 11·18 per 1,000, in the Ghattal town to 18·75 per 1,000, and in the Chundrakona town to 18·68 per 1,000, and that, according to the Civil Surgeon, these towns are notoriously unhealthy, being situated in the malaria-stricken part of the district, it will be seen that much greater improvement in registration is called for, and that the statement of the Sub-divisional Officer is a rather hap-hazard one. In the rural circles of this district the *hath-chitti* or hand-book system, inaugurated last year, is said to have worked satisfactorily, and to have produced improved results. This statement is, however, not borne out by the death records, which show that 49,137 of these events were registered this year in these circles against 50,443 in the preceding year.

The *hath-chatti* system was also brought into operation in the districts named in the margin. The value of this scheme will be apparent from the advance in registration effected in these districts through its action (*vide* marginal figures), although these figures indicate no such advance as to render them representatives of even a rough approximation to the true death-rates of the districts, Rajshahye perhaps excepted. If this system were universally introduced and the register properly kept up, a natural consequence to be expected would be the prevention of the present great defect in death registration. Another advantage possessed by this register is that it contains only a few columns to be attended to by those who make the entries, so that elaboration being avoided, the chances of fictitious entries are reduced to a minimum. But the great drawback to the scheme is want of supervision, and without this perfect success is hopeless. In the North-Western Provinces and the Punjab this scheme is in operation with most excellent results, but the process is under the intelligent supervision of the district medical officers, and in the latter Province also under the vaccinating staff, even the vaccinators assisting during the non-working season. In Sarun, hitherto a very badly registered district, and where a really appreciable advance was attained this year, as shown in the above table, additional impetus to improvement was afforded through the keeping up at each station and out-post of a register separate from the ordinary one, for testing, by local enquiries in villages, the reports of deaths furnished by chowkidars. The great progress made in Noakholli was, in a great measure, due to the Magistrate, Mr. Borooah, having paid much attention to the subject during his visits to the thanahs and outposts.

	Ratio of Deaths per 1,000 of Population.		
	1884.	1883.	Increase in 1884.
Rajshahye	36·49	32·86	3·63
Rungpore	18·86	18·14	·72
Murshidabad	26·98	24·67	2·31
Sarun	21·91	15·33	6·58
Maldah	18·36	18·07	·29
Noakhalli	22·10	17·43	4·67

Bogra.—In this district the Civil Surgeon forwards to the District Superintendent of Police a quarterly statement, indicating shortcomings in registration, for the issue thereon of the necessary corrective orders.

Darjiling.—Act IV (B.C.) of 1873 (the Compulsory Registration Act) was extended from 1st May 1884 into the part of this district west of the Teesta river. The Deputy Commissioner, Mr. Oldham, issued, simultaneously with its introduction, a notification indicating the liability under its provisions of tea-planters and land owners to report all deaths occurring in their respective estates, and explaining to them the advantages to be derived by employing a chowkidar for the purpose. The result has been that all the tea-planters, who were not bound to report deaths before, do so now, and that the services of many chowkidars have been enlisted as reporters. Such of the planters who have not employed chowkidars, report the events personally to the officer in charge of the police-station of the circle in which their plantations are situated. The outcome of these measures has been an improvement in the death-rate of this notoriously badly registered district, as the rate at which deaths were registered during 1884 amounts to 12·80 per 1,000 of population, against 11·11 per 1,000 in

1883 and 7·20 per 1,000, the average of the quinquennium 1879-83. This advance is gratifying, considering that the scheme is a new one with which its manipulators and the people were unfamiliar; was in operation only during a part of the year; and is not applicable to the whole district—and proves convincingly that if the Compulsory Registration Law were extended to the whole district and worked efficiently, a close approximation to, if not the true death-rate of the district may soon be arrived at.

In the *Dacca* town the report of deaths by the people are compared with the registers of the deceased kept at the burial-ground, and those who omit to report the events are prosecuted.

In the *Mymensing* district the police-stations have been divided into beats, and a police constable placed in charge of each beat, within which he is required to enquire and report whether all deaths are regularly reported by the village chowkidars. This is a very commendable scheme.

In the *Patna* town steps have been taken, under a scheme devised by the District Superintendent of Police, to work the Compulsory Registration Act systematically and energetically through the people, the police and the Municipal Commissioners co-operating.

Gya.—Active measures were adopted to improve registration in this district, by causing the police, of all grades, to make constant enquiries in the interior as to whether deaths had been omitted to be reported, and to take steps for the punishment of the defaulting chowkidars. The District and Assistant Superintendents of Police, and Mr. Macpherson, the Sub-Divisional Officer of Nowada, also rendered similar aid in the matter. A good plan, calculated to afford a close check on registration, was also brought into operation in the Gya town. This consists, with regard to deaths, of employing a mohurer, under the supervision of the station police, to grant passes for the interment or cremation of all dead bodies, and of delivering these passes to the police at the burning ghâts and burial-grounds; and, with regard to births, of inducing the midwives to report all the events at which they attend. The effect of these measures will be seen from the marginally noted figures; but it will be observed that the registration of births in the Gya town has not made a sensible advance, and that contrasted with deaths a large omission of the events is indicated.

Deaths.	1884.	1883.
Gya district	26·79	21·14
Gya town	49·07	46·97
Births.		
Gya town	29·41	29·38

Shahabad.—The Sub-Divisional Officer of Sasseram is said to have paid particular attention to registration by ascertaining from the punchayets, whom he assembled for the purpose during his tours, the number of deaths that had occurred. He thinks that the police statistics may be considered fairly accurate.

Mozufferpore.—In the towns of Mozufferpore, Hajipore and Sitamurhee, the provisions of the Compulsory Registration Act were fully enforced, as it was found that neither the police nor the inhabitants of these towns were thoroughly acquainted with the requirements of this law.

Chumparun.—In the towns of Bettiah and Motihari mohurers were employed, and in the former town a peon in addition, to register the vital statistics. In the district the system inaugurated by Mr. Henry in 1882, *vide* page 6 of the Annual Report of that year, was continued with decided improvement as compared with the results of previous years, as the deaths registered in 1884 amounted to 31,643 against 25,638 in 1883, 23,934 in 1882, and 21,377 in 1881. But a record, which shows that the death-rate among the population is only 18·37 per 1,000, must still be very incomplete.

Monghyr.—Last year the registration in this district was most lamentably defective—in fact this district was the worst registered one in the Province. The Magistrate was, in consequence, communicated with on the point by this office, and the consequence has been that during the year under review the District Superintendent of Police and the Municipal authorities pushed on registration vigorously, with the result that a great improvement has been effected, the rate at which deaths were registered being 16·02 per 1,000 of population in opposition to 9·93 per 1,000 in 1883; but the result attained is yet very defective, for a death-rate of 16·02 per 1,000 of population cannot be accepted as a true return.

Bhagulpore.—The town of Bhagulpore has been divided into a number of registering circles and the constables are held responsible for reporting daily the deaths occurring in their respective beats. It is reported that owing to this arrangement "the registration in the town is always well done." This assertion would appear to be supported by the fact that the death-rate in 1884 was 49·17 against 34·16 per 1,000 in 1883.

Balasore.—In the Balasore town steps were taken to work the Compulsory Registration Act more vigorously than hitherto. For this purpose two Sub-Registrars were appointed to look after registration, and the Assistant Superintendent of Police was required to take "proper notice" of any constable who failed to report deaths within his beat as required by the provisions of that Act.

Measures adopted in this Office to improve Registration.

5. The following efforts to improve registration were made by this office during the year in addition to the action taken in the matter in former years, as detailed in the report of those years:—

(1.) In July a form, copy of which is subjoined, was issued to the Superintendents of Vaccination, with a request that all Deputy Superintendents, Inspectors, Head-vaccinators and other officers holding corresponding rank should use it in checking the registration of vital statistics in each village and thanah visited by them, and that a copy of the return should be furnished to this office. The defects found are then reported to Magistrates of districts:—

Name of Village গ্রামের নাম } Name of Thanah থানার নাম } Name of Chowkidar চৌকীদারের নাম

BIRTHS. জন্ম।					DEATHS. মৃত্যু				
Name of Reporter of birth. জন্মের সংবাদ দাতার নাম।	Sex of Child. স্ত্রী কি পুরুষ।	Class or Caste of Child. জাতি।	Month in which born. যে মাসে জন্ম হইয়াছে।	Entered or not in the Thanah Register. থানার রেজেষ্টরী বহীতে লেখা হইয়াছে কি না।	Name of Deceased. মৃত ব্যক্তির নাম।	Age of Deceased. মৃত ব্যক্তির বয়স।	Month in which died. যে মাসে মৃত্যু হইয়াছে।	Entered or not in the Thanah Register. থানার রেজেষ্টরী বহীতে লেখা হইয়াছে কি না।	REMARKS. মন্তব্য।

The object of this form is, it will be readily seen, to regulate and systemize the *modus operandi* adopted in checking and reporting the events, and to give the scheme a wider scope by extending its operation to the entire large area of country traversed by the vaccinating staff; for hitherto the performance of this work was entrusted only to Superintendents and Deputy Superintendents, and the reports were submitted in a prescribed diary which was unsuited for use by the inferior officers in the department. The result of this measure has been that hundreds of these verification statements were submitted, and numerous references made to Magistrates and other local officers, notifying to them that deaths which were ascertained to have occurred in villages had not been reported at the thanahs, and consequently had not been entered in the registers of these events kept up in them. There is reason to believe that this action has led, in many instances, to the rectification of the death records; to the punishment of chowkidars for neglect, and, I trust, to the local reporting and recording officers being more alert in the performance of their duties. I

entertain strong hopes that if this scheme is pursued systematically and persistently, it will have a powerful effect both in improving registration and preventing it retrograding.

(2.) A very close check over similar reports submitted by the Superintendents of Vaccination was also kept up this year, and omissions and remissness on their part censured, the effect being that a much larger number of such reports were received and acted upon, and that this procedure produced results similar to those mentioned above.

(3.) Finding that the municipal weekly records of births and deaths, published in the *Calcutta Gazette*, had some effect in promoting registration in several of the towns of which the records are published, I have solicited Government, in letter No. 7444, dated the 29th December 1884, to extend the scheme to the remainder of the towns in the Province, in the hope that a more extended promulgation of these statistics may lead to the rectification of errors in registration over a wider area.

(4.) As reported before, this office receives quarterly reports of prosecutions instituted and fines levied for evasions of the provisions of the Compulsory Registration Act IV (B.C.) of 1873, from all the towns in which this law is in operation. As in many cases these returns were submitted blank, and as in most instances the registration of births and deaths was found to be defective, the Chairmen of the Municipalities in question, were communicated with, the shortcomings pointed out, and a request made that the provisions of the law be fully utilized with a view to improvement in registration. This action has had, it will be seen from paragraph 10 of this Report, the effect of securing better attention to the subject.

Drawbacks to advance in Registration.

6. From a report received from the Joint-Magistrate of Bettiah in Chumparun, it appears that imperfection in the registration of deaths is traceable to the "omission of the chowkidars to exert themselves to collect statistics of deaths, partly by the withholding of information regarding deaths by the relatives of deceased persons, and partly by the taking of douceurs for the suppression of such information by chowkidars working upon the fears of the ignorant. It may be also that punchayets and chowkidars do not think it worth while to report the deaths of very old women and very young children." He adds that in the course of the census operations of 1881, he was actually asked by an enumerator whether it was meant that old women and young children should be enumerated. If this state of things is at all general, much defect in registration is a necessary consequence.

A few years ago, when Dinagepore was under an energetic District Superintendent of Police, it was the best registered district in the Province. Now it ranks low in the list indicating the value of registration in each district—and it is reported that owing to the attendance of the chowkidars being very irregular, registration has suffered.

In the beginning of 1885 the Government directed the abandonment of the use of the form devised by Mr. Carstairs for checking the registration of births and deaths, the adoption of which in all Municipalities and Unions was sanctioned in orders No. 239T—M, dated the 1st June 1882. This is to be much regretted, as this form, if generally used and regularly kept up, is calculated to improve and advance registration greatly. The advantages claimed for it are, (1) that the head of the family is responsible for keeping it up; (2) that it is a record indicating gain and loss (gain by births and loss by deaths), so that family interests are involved in keeping it up correctly; and (3) that it fixes with certainty the localities where infectious or epidemic diseases, or excessive mortality, may be prevailing.

Registration yet very defective.

7. Notwithstanding the local and departmental efforts made to advance registration as detailed above and in previous reports, the statistical information recorded in this the sixteenth year of the inauguration of the scheme is still very defective.

This is the more apparent from the fact that the registration in towns (taking the figures of the past seven years of which the results are more in advance than those of years preceding that period) has, in spite of the corrective machinery available in them for its improvement, reached the rate of only 23·51 per 1,000 of population for births, and 27·43 per 1,000 for deaths, *vide* figures in the margin. The large fluctuations in the mortuary figures will be found to be traceable to the effect of individual towns taking precedence in the production of high death-rates, due to the unusual fatality with which one or more diseases prevailed in them. One additional reason, and an important one, why the normal death-rate of the Province cannot be seen, is that a large number of the registering circles return altogether unreliable or impossible death-rates, which being component parts of the whole, vitiate the general rate.

	Ratio per 1,000 of population.	
	Births.	Deaths.
1878	19·56	35·13
1879	16·93	33·53
1880	23·44	26·86
1881	25·51	33·47
1882	22·49	31·05
1883	22·08	27·28
1884	23·51	27·43

Local suggestions for improving Registration.

8. Among the suggestions for improving registration made in the local reports the following deserve consideration:—

Dr. Mathew, the Civil Surgeon of Mozufferpore, suggests that the co-operation of the Indigo Planters, whose establishments are scattered all over the district, who hold a large number of villages in farm as ticcadars, who receive very accurate information regarding all that concerns the population of a considerable portion of Mozufferpore and the neighbouring districts, and from whom a trustworthy report regarding the general health of the district can, consequently, always be obtained, should be secured in solving the difficult question as to what the actual death-rate is among the population, and in checking the information relating to deaths submitted by the police.

The Deputy Commissioner of the Sonthal Pergunnahs very correctly observes:—"We have no means of checking death registration, and, until some simple but effectual means are devised, we cannot expect much better results than what we now get. I do not believe that police officers ever take the trouble to check chowkidars' reports, unless for special reasons in special cases. It entails taking the registers with them, or notes or extracts therefrom for comparison. Enquiries by constables are next to useless. The real fact is the police have no heart in it, and the chowkidars have no incentive. Create an interest in the subject, and better registration will follow."

Suggestions have been thrown out, with which I quite concur, that were a portion of the fines realized by prosecuting evaders of the provisions of the Compulsory Registration Act paid to those who bring to notice such evasions, better results in registration might be secured; but in order that appreciable results may be attained the law should be in force in every town in Bengal and its provisions fully utilized.

Suggestions for improving Registration by this Office.

9. But, year after year, suggestions have been made for placing registration on a satisfactory footing. Some of these cannot be adopted on financial grounds, some are incapable of general application, some the people are not sufficiently prepared to adopt, others are calculated to produce but partial or ephemeral benefit. There can, however, be no doubt, as I and my predecessors have often pointed out, that the machinery and organization under which the statistics are at present collected, recorded and supervised, having, after a very long trial, proved a failure in securing even approximately correct results, should give place to some other scheme, which will secure for registration an intelligent and reliable agency and systematic, continuous, and sustained supervision. Perhaps these ends may be realized through the instrumentality of the Union Committees to be established under the Local Self-Government Law just passed, as under that law they are bound to render assistance in birth and death registration. I should think that the hearty co-operation of these bodies (who must form the enlightened portion of the community, and be consequently capable of estimating good advice) may be looked for, if it is explained to them that the sole object and intention of Government in calling for vital statistics is the sanitary welfare

of the people whom they represent; that reliable statistics are necessary for ascertaining how much disease, especially of an infectious and epidemic character, is present among the people, and how severe is the penalty the people suffer by its presence; and that with this information the causes which aid and foster the prevalence of disease will be sought for, and measures to remove them, or ameliorate their incidence, or prevent their recurrence, taken.

From reports received it appears that the Police Department have objected in some towns to carry on registration, and it is a question whether the Municipality should undertake the work under the provisions of Part XI of the Bengal Municipal Act of 1884. I should be glad to see all Municipalities attend to registration in their towns. This would necessitate the entertainment of paid agency and personal supervision of the work by the Commissioners, but the gain would counterbalance the expense and trouble incurred. Under the existing system there is a great tendency on the part of the Municipality to throw the responsibility of efficiently carrying out the work on the Police, while the Police disclaim the responsibility, the consequence being that registration suffers. The full exercise of the powers vested in Government by Part XI of the abovementioned enactment is a desideratum.

Extension of the Compulsory Registration Act, IV (B.C.) of 1873.

10. This enactment was extended during the year under review to the Bansberiah and Naihatti Municipalities, the former in the Hughli and the latter in the 24-Pergunnahs district, and to that part of the Darjiling district which lies to the west of the river Teesta, so far as it provides for the registration of *deaths*, but not of *births*. The law is now in operation in 116 towns and one rural tract. In the following table are shown the towns in which prosecutions for breaches of its provisions were instituted and the results:—

Districts.	Towns.	Number prosecuted.	Number convicted.	Number acquitted.	Number struck off.	Number pending.	Amount of fines realized.	Birth-rate per 1,000 of Population.	Death-rate per 1,000 of Population.
							Rs. A. P.		
Burdwan ...	Burdwan	3	2	1	......	......	1 0 0	15·77	38·49
	Ranigunge	2	1	1	......	......	0 8 0	Not registered.	28·52
	Cutwa	1	1	......	......	......	0 4 0	Ditto.	34·75
	Dainhat	3	3	......	......	......	2 0 0	Ditto.	29·71
	Culna	1	1	......	......	......	2 0 0	Ditto.	24·49
Bankura ...	Bankura	2	1	......	......	1	2 0 0	33·55	30·61
	Bishenpore...	1	1	......	......	...	4 0 0	27·76	24·80
Midnapore ...	Midnapore	1	......	1	......	......	......	21·33	31·22
	Tumlook	6	6	......	......	......	1 6 0	Not registered.	20·51
	Ghattal	25	24	1	......	......	7 3 6	Ditto.	18·75
	Chundrakona	1	1	......	......	......	1 0 0	Ditto.	18·68
Hughli ...	Hughli and Chinsurah	22	20	......	2	....	8 13 0	22·82	28·64
	Serampore	1	1	......	......	......	1 0 0	31·02	34·00
	Utterparah..	7	6	1	......	......	1 13 0	25·04	23·59
	Bansberia	5	2	2	......	1	0 4 0	Not registered.	38·25
Howrah ..	Howrah	81	71	10	......	......	48 7 0	27·05	28·59
	Balli	3	3	......	......	......	5 0 0	22·40	21·19
24-Pergunnahs ...	Suburbs of Calcutta ...	3	......	......	......	3	......	23·27	45·29
	South Suburban town ...	4	4	......	......	......	3 10 0	Not registered.	18·46
	Barrackpore Cantonment	3	3	......	......	......	15 0 0	Ditto.	20·58
	Naihatti	2	2	......	......	......	0 8 0	Ditto.	34·59
Nuddea	Kishnaghur	4	4	......	......	......	0 13 0	22·38	33·62
Murshidabad ...	Jungipore	4	3	1	......	......	0 11 0	Not registered.	21·49
	Lalbagh	8	7	......	1	......	2 2 0	Ditto.	32·65
Rajshahye ...	Rampore Beauleah ...	6	6	......	......	......	6 0 6	13·69	38·35
	Nattore	8	7	1	......	......	8 4 0	Not registered.	31·44
Bogra	Sherpur	2	2	......	......	......	2 0 0	Ditto.	40·83
Darjiling ...	Darjiling	1	1	......	......	......	1 0 0	8·27	19·05
Dacca	Dacca	23	18	4	......	1	13 10 0	19·58	32·03
Mymensing ...	Nasirabad	1	1	......	......	......	0 4 0	Not registered.	30·58
	Sherpore	6	4	......	2	......	4 0 0	ditto.	26·52
Tipperah	Commillah	2	2	......	......	......	4 0 0	25·61	17·39
	Brahmenberiah	25	20	1	......	4	17 4 0	37·45	22·40
Mozufferpore ...	Sitamurhee	1	......	......	......	1	......	24·31	19·91
Durbhanga ...	Durbhanga	6	3	3	......	......	0 12 0	1 29·57	23·99
	Madhubani	10	8	......	1	1	2 2 0	Not registered.	16·53
Chumparun ...	Beltiah	3	3	......	......	......	9 0 0	35·17	20·36
Monghyr	Monghyr	61	48	12	1	......	39 12 0	22·04	23·56
	Jamalpore	2	2	......	......	......	0 12 0	49·39	32·88
Purneah	Purneah	15	2	1	......	12	5 8 0	17·51	34·62
Maldah	English Bazar	3	......	3	......	......	......	Not registered.	25·50
Cuttack	Cuttack	28	22	4	2	......	16 8 0	14·91	15·17
	Total	396	316	47	9	24	240 2 6		

This table shows that, compared with the list of 1883, 396 against 297 persons were prosecuted in 42 against 25 towns, of whom 316, or 79 per cent. against 232, or 78 per cent., were convicted; that the fines realized amounted to Rs. 240-2-6; and that the result of the measure was an advance, to a more or less extent, in the registration of births in 18, and of deaths in 23 of the 42 towns in comparison with the figures of 1883. These facts indicate great improvement

in the administration of this law, and it is gratifying to find for the first time, from some of the reports, that the absence or paucity of prosecutions is due to the people spontaneously and regularly reporting the occurrence of births and deaths among them, and thus giving no occasion for the exercise of the clause of the law prescribing a penalty for evasions, and that, moreover, in some Municipalities special agency has been engaged to detect cases of non-compliance by the people with the requirements of the law. I attribute this advance to the closer attention given to the subject by this office in the manner mentioned in paragraph 5, clause 4, of this Report. Nevertheless, it is also apparent that much yet remains to be done before the working of this enactment can be said to be quite satisfactory.

Changes affecting Circles of Registration.

11. The following revisions affecting the Circles of Registration were effected during the year :—

Midnapore.—Village Kayaput was removed from the jurisdiction of thanah Gurbetta in Midnapore to that of thanah Goghat in Hughli, involving a decrease of 2,237 in the population in the former district and a corresponding increase in that of the latter. *Howrah.*—Balli, which hitherto formed a part of the Howrah Municipality, was constituted a separate Municipality with a population of 14,815. 24-*Pergunnahs.*—Outpost Goberdanga with its population of 6,464 was removed from the jurisdiction of thanah Baduria to that of thanah Habra, both in this district. *Murshidabad.*—Owing to interchange of villages the boundaries of thanahs Barna, Bharatpur and Gokurna have been altered with a redistribution of the population, the population of the first-named thanah being now 67,912, that of the second, 1,08,025, and that of the third, 42,446. *Rajshahye.*—A number of villages with their population of 2,273 were transferred from thanah Charghat to thanah Lalpore. *Rungpore.*—Similarly certain villages with their population of 6,336 were transferred from thanah Kumargunge to thanah Darwani. *Bogra.*—Certain portions of thanahs Bogra, Sherpur and Shariakandi were formed into a new independent outpost, named Dhunat, with a population of 61,003. *Dacca.*—The union of Manickgunge was abolished and incorporated with thanah Manickgunge, thus increasing the population of the latter by 11,289. *Poori.*—Villages Mahantsahi and Matiapara in thanah Poori were, with their population of 492, transferred to the town of Poori.

The above changes did not, however, affect, on the whole, the total population of the Province.

BIRTH STATISTICS.

Number born.

12. The number of births reported to have occurred in the 47 towns in which the events were recorded and their general results on population and mortality are submitted in the subjoined table :—

	1884.	1883.
Number of towns	47	46
Population	1,685,651	1,686,159
Number born	39,640	37,215
Birth-rate per 1,000 of population	23·51	22·08
Deaths	50,349	50,487
Death-rate per 1,000 of population	29·86	29·95
Excess of deaths over births	6·35	7·87
Number born dead (not included above)	1,437	1,437

Beyond the fact that the birth-rate had increased by 1·43 per 1,000 of population, the above figures forbid any further conclusion of intelligible consequence, the record being lamentably faulty.

13. *Towns which returned the highest proportions of Births.*

	1884.	1883.
Jamalpore (in Monghyr) ...	49 39	49 17
Kendrapara ...	46 91	25 54
Brahmanberia ...	37 45	33·46
Bettiah	35 17	30·47
Jamalpore (in Mymensing)	34 49	34·24
Bhagulpore	33 88	33 64
Bankura	33 65	34 93
Revilgunge	32 41	37 30
Serampore	31·02	26 79
Durbhanga	29 57	24 32
Gya	29 41	29 38

The above results may be considered as approximating the truth in a more or less degree, and afford a lesson to the rest of the towns as to what can be effected by care and attention to the subject.

14. *Towns which recorded Births in excess of Deaths.*

	Rate of excess per 1,000 of population
Kendrapara . ..	21 81
Jamalpore (in Monghyr)	16 51
Brahmenberia ...	15 05
Bettiah	11 81
Patna	8·61
Comillah	8 22
Durbhanga	5 58
Sitamurhi ...	4 40
Revilgunge	3 36
Bishenpore	2 96
Bankura .. .:.	2·94
Jamalpore (in Mymensing) ...	2 69
Futwa	2 58
Purulia ...	1 62
Utterpara	1 45

This is a very incomplete list, as only 15 out of the 47 towns occupy places in it. Unless there exists some special circumstances accounting for the defect, there ought to be a preponderance of births over deaths in every town.

15. *Births according to Sex.*

Of the sexes born 21,331 were boys and 18,309 girls, yielding the proportions to population of 12·65 and 10·86 per mille respectively, and the percentage of male to female births of 116. The corresponding figures of the preceding year are male births 11 79 per 1,000, female births 10·29 per 1,000, and male to female births 114 per cent. The results of the year under review vary very little from these figures numerically, but, as usual, there was a preponderance of male births, accounted for by causes explained in former reports.

16 *Births according to Class or Nationality.*

	In 1884.		In 1883.	
	Number of births	Ratio per mille	Number of births	Ratio per mille
Christians ..	105	22 95	376	21 31
Hindus ...	27,638	23 28	25,818	21 75
Mahomedans .	11,487	21 18	10,970	23 10
Budhists	31	14 65	2	94
Other races ..	79	19 78	49	12 27

The figures of 1884 present the same features as those of the preceding year, viz, that in accession to population by births, the Mahomedans rank first, the Hindus second, and the Christians third—the other nationalities being eliminated.

Births among Non-Asiatics and Mixed Races.

17. Among these classes the births of 645 children were recorded, of whom 336 were boys and 309 girls.

DEATH STATISTICS.

Population and Area under Registration.

18. The mortuary events of the year under review, the details regarding which are hereinafter discussed, occurred in 652 (96 urban and 556 rural) main circles in which death-rolls are kept up, and among a population numbering 66,163,884, distributed into sex and nationality as follows :—

	Urban.	Rural.	Province
Population according to Sex.			
Males	1,277,520	31,554,696	32,832,216
Females	1,180,846	32,150,822	33,331,668
Total ..	2,458,366	63,705,518	66,163,884
Population according to Class.			
Christians	22,222	79,662	101,884
Hindus	1,744,365	41,208 664	42,953,029
Muhomedans	684,323	20,677,634	21,361,957
Budhists	2,173	77,548	79,721
Other classes	5,278	1,662,015	1,667,293

19. Of the above population 1,378,610 were reported to have died during the year under review, at the rate per mille and in the areas exhibited in the subjoined table:—

Number and Proportion of Deaths.

	In 1884.		In 1883.	
	Deaths.	Ratio per mille.	Deaths.	Ratio per mille.
Urban	67,443	27·43	67,383	27·28
Rural	1,311,167	20·58	1,178,293	18·49
Province	1,378,610	20·83	1,245,676	18·82

These figures indicate that, in comparison with the preceding year, the mortality was higher by 2·01 per 1,000 of population; but it is seen that this increment is almost entirely limited to the *rural* circles. This points to growing interest in the subject in these circles rather than to higher suffering among the people.

20. The aggregate death-rate of the year was distributed as follows over the specific diseases which caused the casualties. The figures do not include the still-born children numbering 20,015:—

Mortality from Specific Death Causes.

	Proportion of Deaths per 1,000 of Population.								
	In 1884.			In 1883.			In 1879-83.		
	Urban.	Rural.	Province.	Urban.	Rural.	Province.	Urban.	Rural.	Province.
Cholera	3·81	1·96	2·03	3·64	1·27	1·36	3·47	1·52	1·59
Small-pox	1·10	·24	·28	27	·14	·14	·65	·27	·28
Fevers	12·80	14·66	14·60	13·77	13·81	13·81	15·50	12·26	12·38
Bowel-copmlaints	3·24	·79	·88	3·54	·73	·83	3·89	70	·82
Injury	·44	·36	·37	·40	·35	·35	·42	·38	·33
Other causes	5·01	2·54	2·66	5·64	2·18	2·30	5·79	1·73	1·89
All causes	27·43	20·58	20·83	27·28	18·49	18·82	29·72	16·82	17·30

Faulty as these figures are, they present the following noteworthy facts in connection with the returns of both the periods (1883 and 1879-83) with which comparison is instituted.

(1.) That the aggregate increase in the mortality of the year was distributed over *every* specified head of disease.

(2.) That eliminating bowel-complaints and injury, the enhanced fatal results from which exhibit only fractional variations, and small-pox, the mortality from which maintained the same ratio, the integral portion of the increment was contributed by cholera, fever and the maladies classed under the head of "other causes," fever taking the lead, *vide* marginal figures.

	Increase per mille as compared with	
	1883.	1879-83.
Fever	·79	2·22
Cholera	·67	·44
Other causes	·36	·77

(3.) That looking to these figures again, it is seen that the enhanced mortality from none of these diseases exhibits emphasized excess, excepting from fever in comparison with the results of the quinquennium 1879-83.

(4.) That while in the *urban* circles fever and bowel-complaints which prevail universally, and the first of which causes, relatively, the greatest loss, exhibited abated mortality, in the *rural* circles these diseases as well as *all the rest* displayed enhanced fatal results.

The significant deduction to be drawn from the abovementioned facts is that, local disturbances excepted, the year under review was not, on the whole, characterized by the prevalence of any disease in a form (in comparison with its incidence during preceding years), the severity of which attracts special notice; and that, where registration has been improved, the opinion is growing that the rural circles, characterized by the existence in them of unchecked morbific influences stimulated by primitive filthiness of habits of the people, &c., are unhealthier than the urban circles in which corrective precautions are observed. With regard to the latter observation, the remarks of Dr. Russell, the Civil Surgeon of Nuddea, regarding the relative health status of the urban and rural areas in that district claim attention. He bases his views on the results of the mortuary statistics influenced more largely by fever and cholera than in other districts, and on information gathered from other sources. He says that, if 35 per mille is to be accepted as the average rural death-rate in Bengal, the rural rates

in Nuddea will be found to be abnormally high, but not excessively so. This being the case, the mortality in the towns, when found to be considerably lower than in the rural areas for a series of years, leaves no other inference than that the health of the towns is gradually improving, for registration can scarcely be considered to have influenced this improvement, as it is beyond doubt that better care in this matter is taken in the urban than in the rural areas, although the incidence of the prevalent fever in Nuddea has caused the registering agency to be more diligent in both areas. This improvement in the towns is referred to the sanitary improvements effected in the urban circles, which have left their mark on the health of these areas, and is steadily lowering their death-rate. It seems to the Civil Surgeon that "sanitary improvement, even in the elementary and imperfect stage which it has as yet reached in many of these towns, has yet exerted a well marked influence in stamping out an abnormally high death-rate;" while, "on the other hand, the rural areas, i.e., those still untouched by sanitary works, are showing no signs of improved health or of decline in their high death-rates." He adds that "this contrast between the rural and the urban death-rates is the more remarkable, in that it completely belies the statistical maxim that rural areas should have a lower death-rate than urban ones, *i.e.*, have better health."

	Ratio of death per mille			
	1884	1883	1882	1881
Towns combined	26 84	31 40	35 8	37 21
Rural circles combined	40 57	36 41	40 52	41 94

21. **Mortality in Bengal, Behar, Orissa and Chota Nagpore.**

	In 1884					In 1879-83				
	Cholera	Small-pox	Fevers	Bowel-complaints	All Causes	Cholera	Small-pox	Fevers	Bowel-complaints	All Causes
Bengal	2 71	05	16 67	47	22 82	1 1	17	14 10	61	18 71
Behar	[illegible]	76	13	77	18 24	1 66	23	10 [illegible]	47	1[illegible] 1
Orissa	4 95	10	7 31	3 21	23 61	2 87	1 14	7 10	2 70	18 13
Chota Nagpore	[illegible]	26	12 34	1 18	16 10	73	25	10 8[illegible]	1 13	14 81

The figures in this table disclose that, relatively considered, cholera and bowel-complaints caused greatest loss of life in Orissa, small-pox in Behar, and fever in Bengal; and that, in comparison with the average mortality during the quinquennium 1879-83, cholera was more fatal in Bengal, Orissa and Chota Nagpore, and less so in Behar; small-pox exhibited greater activity in Behar than in the other three divisions; fever prevailed with enhanced severity in all the four divisions, and bowel-complaints caused more loss of life in Bengal, Orissa and Chota Nagpore, but maintained an equal death-rate in Behar—the culminating result being that in mortality from all causes, the four divisions exhibited higher mortality.

22. *Seasonal incidence of the Diseases.*

Months	Deaths in 1884	Months	Deaths in 1879-83
November	151,886	December	129,829
December ..	145,089	November ..	123,282
April	132,729	October .	101,779
October .	115,823	January .	98,167
May	115,777	April ...	92,111
January ..	113,000	August .	91,508
August	107,875	September ..	88,454
March . .	107,819	May	87,684
September ...	100,532	July ..	87,285
June .	98,258	March ..	84,749
July	95,802	June ...	81,195
February	94,020	February	78,921

It is again seen that, in consonance with the law of former years, the fourth quarter is the most fatal to life in the Province. It is during this period that fever and bowel-complaints are most active. April and May were also unhealthy months, due to cholera and small-pox having presented the largest number of deaths during these months.

23. The next table shows that of the sexes 119 males died to every 100 females, against 118 in 1883 and 122 during the lustrum 1879-83, indicating again defect in the relative proportions, which ought to approximate more closely, the propor-

Mortality according to Sex

tionate numbers living being, according to the Census of 1881, 99 males to every 100 females :—

	In 1884.			In 1883.			In 1870-83		
	Deaths.	Ratio per mille.	Proportion per cent. of male to female deaths	Deaths	Ratio per mille	Proportion per cent. of male to female deaths	Deaths	Ratio per mille	Proportion per cent. of male to female deaths
Males	7 [illegible] 113	22 81	11[illegible]	6 7[illegible] 175	20 [illegible]	118	6 31 [illegible]	19 22	122
Females	[illegible] 2[illegible] 1[illegible]7	18 88		5 [illegible] 501	17 [illegible]		[illegible]	1[illegible] 41	

21. *Mortality according to Age.*

	In 1884				In 1883			
	Ratio per mille			Proportion per cent. of male to female deaths	Ratio per mille			Proportion per cent. of male to female deaths
	Urban	Rural	Province		Urban	Rural	Province	
Under 1 year	1[illegible]6 [illegible]4	111 87	11[illegible] [illegible]0	1[illegible]1	178 70	9[illegible] 18	[illegible]	1[illegible]2
1 to 5 years	[illegible] 80	23 04	[illegible]3 [illegible]	1[illegible]	[illegible]	19 41	[illegible]	1[illegible]
5 to 10 years	17 05	11 [illegible]	11 [illegible]7	130	17 [illegible]	10 35	10 [illegible]	130
10 to 15 "	13 0	1[illegible] [illegible]0	10 15	1[illegible]2	1[illegible] 0	[illegible]	[illegible]	1[illegible]
15 to 20 "	18 [illegible]	1[illegible] [illegible]	1[illegible] [illegible]1	105	[illegible]	13 06	1[illegible] [illegible]	107
20 to 30 "	18 [illegible]	14 [illegible]6	14 44	109	[illegible]	1[illegible] [illegible]	1[illegible] [illegible]	1[illegible]
30 to 40 "	20 [illegible]7	1[illegible] [illegible]	16 14	135	[illegible]0 00	1[illegible]	1[illegible] [illegible]1	1[illegible]2
40 to 50 "	[illegible]1 65	[illegible]0 [illegible]	20 [illegible]	140	[illegible]	1[illegible]7	1[illegible] [illegible]8	1[illegible]1
50 to 60 "	30 1[illegible]	[illegible] 8[illegible]	[illegible] [illegible]3	118	[illegible]1 [illegible]7	[illegible] 1	[illegible] 43	117
60 years and upwards	52 43	[illegible]	48 74	98	6[illegible] 85	41 [illegible]0	[illegible]	97

The only salient features manifested by these figures are considerable improvement in the record of infantile mortality and some advance towards a more reliable death-rate of the aged. In the subjoined table are exhibited the districts in which deaths of infants, children and old persons were recorded in the highest proportions. The record, although better than the one for last year, is yet very defective :—

Under 1 year		1 to 5 years		50 to 60 years		60 years and upwards	
Poori ...	330	Nuddea ...	49	Rajshahye ...	44	Backergunge	77
Balasore ..	241	Pubna	47	Nuddea .	42	Hazaribagh	72
Backergunge	236	Gya	44	Pubna ..	41	Nuddea	72
Patna	231	Rajshahye	44	Hazaribagh ...	40	Pubna ...	71
Birbhum	203	Patna	44	Jessore ...	40	Noakhally	68
						Balasore	[illegible]7
						Poori	67
						Gya	64
						Jessore .	64
						Bogra	6[illegible]
						Midnapore	60
						Dacca .	60
						Rajshahye .	58
						Khulna	57
						Birbhum	54
						Cuttack	54
						Burdwan	54
						Howrah	53
						Bankura	52
						Tipperah	51

Deaths according to Class or Nationality

25. Under this head the distribution of the mortality stands as follows :—

	Ratio per 1,000 of Population.								
	In 1884			In 1883			In 1870-83		
	Urban.	Rural	Province.	Urban	Rural	Province	Urban.	Rural	Province
Christians	20 88	11 58	13 61	22 68	9 70	12 52	22 13	[illegible]8	12 16
Hindus	27 41	19 96	20 26	27 76	18 05	18 45	30 10	1[illegible] 73	17 27
Mahomedans	27 80	22 30	22 48	26 39	19 70	1[illegible] 91	23 09	17 02	17 4[illegible]
Budhists	31 68	13 29	13 79	16 06	11 74	11 84	19 00	[illegible] 23	[illegible]7
Other races	13 07	15 22	15 21	11 74	15 22	15 [illegible]1	23 [illegible]	16 03	1[illegible] 01

Of the three principal nationalities, the Mahomedans appear to have suffered the most, the Hindus in the next degree, and the Christians the least. The events as they occurred in the preceding periods with which comparison is made present similar features, except that the mortality among the Mahomedans does not exhibit, as contrasted with that among the Hindus, the large excess seen during the year under review.

Deaths among Non-Asiatics and Mixed Races.

26. Among these classes 679 deaths occurred, distributed into 460 males and 219 females, and caused by cholera 94, small-pox 5, fever 101, bowel-complaints 61, injury 52, and other causes 366.

27. *Births and Deaths in Calcutta in 1884 compared with the same events in the Bengal towns.*

	Births.		Mortality.							
			Ratio per 1,000 of population.							
	Ratio per 1,000 of population.	Proportion per cent of male to female Births.	All Causes.	Cholera.	Small-pox.	Fever.	Bowel-complaints.	Injury.	Other causes.	Proportion per cent of male to female Deaths.
Calcutta	19 13	108	30 59	5 24	1 10	8 35	2 70	·47	12 63	149
Bengal towns ..	23 51	110	27 43	3 81	1 10	12 89	3 24	·44	5 91	138

The figures indicate that in birth registration the Bengal towns excel Calcutta, excepting the defect seen in the record of girls born The excessive male population of Calcutta must not, however, be forgotten as a factor seriously influencing the birth-rate. Referring to the return of deaths, it will be seen that cholera was much more severe in Calcutta than in the Bengal towns generally; small-pox on an equal footing; fever and bowel-complaints less destructive; injury much the same; while other causes were more than double. The smaller death-rate from fever and increased rate from "other causes" may most likely be explained by more correct diagnosis of disease in Calcutta.

28. *Mortality of Natives in the 11* Cantonments in Bengal.*

		1884.	1883.
Population		33,346	33,991
	Deaths in 1884.	Ratio per mille. In 1884.	Ratio per mille. In 1883.
All Causes	812	21 35	21·50
Cholera	39	1 17	1·85
Small-pox	25	·71	14
Fever	419	12 56	11·38
Bowel-complaints	97	2 90	1 67
Injury	20	59	·47
Other causes	212	6·35	5·97

In comparison with 1883 the mortality from every death cause, excepting cholera, was higher, particularly from fever and bowel-complaints. The casualty-rates in each of the Cantonments are shown below, ranged in the order of severity with which diseases prevailed in them:—

	Ratio per mille.		Ratio per mille.
Hazaribagh	129 41	Dinapore	24 65
Darjiling	39·56	Fort William	18·20
Alipore	33·16	Buxar	14·06
Barrackpore	30 04	Dum Dum	12·99
Cuttack	29 33	Segowli	10 59
Dorunda	28 13		

The highest mortality again occurred in the Hazaribagh Cantonment. This Cantonment has been subject to this high rate of suffering for the past three years consecutively.

* Troops were not located in the Cantonments of Hazaribagh from April to December, Alipore in August and September, and Segowli in November and December.

Port of Calcutta—*Sickness and Mortality in*—

Among European Seamen.

29. The subjoined table shows, at one view, the sickness and mortality which prevailed among the *European seamen* in the Port of Calcutta during the year under review.

1	2	3	4	5					
				In 1884					
								Ratio of deaths per 1,000 of population	
Sickness	Population as per Census of 1881	Population as per estimate of the Health Officer	Number who visited the Port	Admissions into hospital	Deaths.	Ratio per cent of deaths to treated.	Ratio of deaths per 1,000 of the number who visited port	As shown in column 2	As shown in column 3
In Hospital									
Cholera ...	2,731	1,684 in 1884. 1,960 in 1883.	21,182	67	36	5.73	1.69	[illegible]	21.37
Diarrhœa				125	3	2.40	.14	1.07	1.78
Dysentery				80	2	2.50	.09	.71	1.18
Fever, enteric				7	5	71.42	.23	1.79	2.96
„ malarious				158	2	1.26	.09	.71	1.18
„ simple				297					
Scurvy				24	1	4.16	.04	.35	.59
Small pox				7					
Sunstroke or heat apoplexy				13	1	7.69	.04	.35	.59
Other diseases				1,248	26	2.08	1.22	9.51	15.43
Total				2,026	76	3.75	3.58	27.83	45.13
Out of Hospital									
Cholera					1		.04	.37	.59
Sunstroke or heat apoplexy					3		.09	.71	1.18
Congestive fever					1		.04	.37	.59
Drowned in Port					21		.99	7	12.47
Other diseases					6		.28	2.14	3.56
Total					31		1.46	11.10	18.40
Grand Total				2,026	107	3.75	5.05	39.33	63.53

The following facts are deducible from the figures in the above table in comparison with those of the preceding year.

Of 21,182 European seamen who entered Port, 2,026 resorted to hospital suffering from the diseases named in the margin. Compared with the return of the preceding year, it is seen that while there was an increase of admissions to hospital for cholera, simple fever, scurvy, small-pox, sunstroke and the maladies classed under the head of "other diseases," there was a fall in the numbers from malarious fever, dysentery and diarrhœa—diseases which always figure largely on the sick list. There were also seven cases of enteric fever against none in the preceding year.

	Number of Admissions In 1884	In 1883
Cholera ...	67	65
Diarrhœa	125	164
Dysentery	80	90
Fever, enteric	7	
„ malarious	158	323
„ simple	297	114
Scurvy ..	24	11
Small pox	7	5
Sunstroke or heat apoplexy	13	4
Other diseases ..	1,248	1,169
Total	2,026	1,948

Marginally are shown the casualties which occurred among the number stated above to have been admitted to hospital, and the proportionate mortality caused by each disease among the European Port population as estimated by the Health Officer. This record shows that the death-rate among the number who entered hospital was 45·13 per 1,000 of population, that there was a considerable rise, represented by 1·48 per mille of population in the mortality from cholera, against a diminution in the death-rates from dysentery, malarious fever, sunstroke and the maladies designated "other diseases;" and that while diarrhœa, enteric fever, and scurvy caused no casualties in 1883, they carried off this year 1·78, 2·96 and ·59 per 1,000 of the population respectively.

	Population.	Deaths	Ratio per mille 1884	1883
Cholera	1,684	36	21.37	19.89
Diarrhœa		3	1.78	.
Dysentery		2	1.18	2.15
Fever, enteric		5	2.96	
„ malarious ..		2	1.18	2.15
„ simple				
Scurvy		1	.59	.
Small pox		..	.	
Sunstroke or heat apoplexy		1	.59	1.61
Other diseases . ..		26	15.43	17.74
Total		76	45.13	43.54

In addition to the above mortality, 31 deaths occurred *out of hospital* from causes named in the margin, thus raising the total death-rate to 63·53 per 1,000 of population, or excluding 21 casualties from accidental drowning, which the Health Officer does not take to account in estimating the loss of the year, to 51·06 per mille.

Causes.	Number of deaths.
Cholera	1
Sunstroke or heat apoplexy	2
Congestive fever ..	1
Drowned in Port ...	21
Other diseases	6

The death-rate of the year, contrasted with those of the three preceding years, stands as noted in the margin. These figures indicate that, on the whole, the health of the European seamen in Port was better than in 1881 and 1882, but not so in comparison with 1883.

	Deaths			Ratio per mille		
	In hospital	Out of hospital.	Total	In hospital	Out of hospital	Total
1884	76	31	107	45·13	18·40	63·53
1883 .	81	10	91	43·51	5·37	48·92
1882 ..	94	6	100	52·45	3·35	55·80
1881 ...	65	7	72	48·11	5·18	53·33

30. Thirty-seven deaths occurred at sea among the European seamen, against 51 in the preceding year. Excluding 12, of which the causes have not been mentioned, the rest of the casualties occurred from fever 1, heat apoplexy 2, heart diseases 4, drowning 13 and other accidents 5. The fever death occurred on board a vessel from Rio Janiero where yellow fever was prevalent during the vessel's stay in that port, and as the death occurred within a week of her departure, it is believed that it was caused by yellow fever.

Deaths during Voyage.

31. The sickness and mortality among the *Native Floating Population* are exhibited in the following table:—

Among Native Floating Population.

Sickness	Native Floating Population at the Census of 1881	Number who visited the Port	In 1884 — Total deaths among Native Floating Population	Ratio of deaths per 1,000 of population	Number of Native Floating Population who were treated in hospital	Deaths among this number	Ratio per cent of deaths to treated
Cholera	25,409	9,172	138	5·43	95	38	40·00
Diarrhœa					4		
Dysentery			2	·07	5	1	20·00
Fever, malarious			5	·19	30		
" simple			10	·39			
Small-pox			5	·19	9	4	44·44
Scurvy							
Sunstroke or heat apoplexy					1		
Other diseases			37	1·46	157	19	12·10
Total			197	7·75	301	62	20·59

This record shows that 301 of the Native Floating Population, estimated at 25,409 at the census of 1881, resorted to hospital to receive treatment for the diseases named in the margin, and that of this number 62 died; that in addition 135 of this population died on boats (from the diseases also indicated marginally), thus raising the total number of the casualties of the year to 197, which yields a death-rate of 7·75 per 1,000 of population; that of the diseases which afflicted this population, cholera was the most fatal, the deaths from it amounting to no less than 70·05 per cent. of the total loss of the year; and that with regard to the other diseases, bowel-complaints and fever prevailed with mitigated severity, while small-pox and the diseases classed under the head of "other causes" exhibited higher mortality, the former to a slight and the latter to a considerable extent.

	Admissions to hospital.	Deaths in hospital	Deaths on boats.	Total.	Ratio per mille In 1884.	Ratio per mille In 1883.
Cholera	95	38	100	138	5·43	4·56
Diarrhœa	4		..		..	·07
Dysentery	5	1	1	2	·07	·47
Fever, malarious	30	...	5	5	·19	·31
" simple		.	10	10	·39	·55
Small pox	9	4	1	5	·19	·07
Scurvy		.	.	..		..
Sunstroke or heat apoplexy ..	1		...	..	..	
Other diseases	157	19	18	37	1·45	·94
Total .	301	62	135	197	7·75	7·00

	Deaths.	Ratio of deaths from cholera.	Total ratio per mille.
1884	197	5·43	7·75
1883	178	4·56	7·00
1882	186	4·52	7·32
1881	141	2·75	6·54

From the marginal figures it will be seen that, on the whole, the health of the Native Floating Population was worse than during three preceding years, cholera taking a predominating part in causing this unhealthiness.

Health and treatment of Lascar crews who proceeded on foreign voyages.

32. The average number of native seamen who left the Port this year on foreign and coasting vessels, and the mortality recorded in the official logs as having occurred among them at sea, are exhibited below:—

		Average strength.	Deaths.	Ratio per mille on average strength.
On Coasting voyages	... ...	3,417	5	1·45
On Foreign vessels ...	Steamers	5,046	22	3·84
	Sailing	679		
	Total	9,172	27	2·94

against 15 deaths among 4,783 men, or at the rate of 3·13 per mille in the preceding year. Enquiry into the manner in which the lascars were treated elicited five complaints with regard to diet. In three of these cases compensation was granted, in one the complaint was found to have been unfounded, and with regard to the fifth, stating that limejuice and mustard oil had not been issued, it was ascertained that these articles had been struck out of the scale by the agents of the vessel before the men left Port. With reference to this case, the Health Officer observes that arbitrary interferences of this description, with the authorized allowances to native crews, will be prevented in future by the Government Notification of the 8th August 1884 (since amended by Notification dated 6th June 1885), indicating the minimum scale of provisions to be provided for lascars in accordance with the provisions of section 25 of the Indian Merchant Shipping Act V of 1883.

GENERAL HEALTH OF THE PROVINCE.

Nuddea.	Murshidabad.
Rajshahye.	Bogra.
Pubna.	Khulna.
Balasore.	Cuttack.
Jessore.	Faridpore.

33. The districts which were markedly unhealthy during the year are those named in the margin, arranged in the order of insalubrity, and the causes of impairment of health were excessively fatal prevalence of cholera in all of them, and, in addition, of fever in Nuddea, Rajshahye, Pubna, Jessore and Bogra. Backergunge and Gya also rank high on the casualty roll, but the local authorities of these districts are decidedly of opinion that this is due to improvement in registration. This observation also applies to several other districts in which the mortality, although not very high, was still greater than during the preceding year, and the local opinion is that they enjoyed good or fair health. The Shahabad, Mozufferpore and Durbhanga districts are stated to have been healthier than during several past years. It is thus apparent that, on the whole, the health status of the Province had not deteriorated, whatever may be the standard of healthiness or unhealthiness normal to it, which, it is to be regretted, has not yet been statistically determined. That this should have occurred in a year of high prices for food-grains, particularly rice (*vide* marginal table), owing to the harvest having failed generally from deficient, early cessation, unseasonable, capricious distribution, or, in a few cases, excessive rainfall, is worthy of note. But the opinion, largely shared, is, that the prejudicial effects of a diminished food-supply with high prices were more than counterbalanced by a comparatively drier season proving beneficial to health. The exceptions to the observations with regard to the food outturn of the year are that the harvest was above average in Midnapore, Khulna and Sonthal Pergunnahs, and good in Chittagong, Dacca, Dinagepore, Balasore, Lohardugga, Noakhalli, Hughli and Singbhum. It should, however, be noted that in *Chittagong* the *aman* crop was damaged to the extent of 4 annas in thanahs Mirsera

	Price per maund in 1884.	Average prices of the three preceding years.	Difference in 1884.	Price per maund in 1883.	Rainfall. In 1884.	Rainfall. Average of preceding years.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Inches.	Inches.
Common rice ...	2 8 1	1 10 6	0 13 7*I*	1 15 1	57·56	64·70
Pulses	2 6 11	2 3 11	0 3 0*I*	2 6 6		
Wheat	4 0 9	4 6 7	0 5 10*D*	4 2 6		
Fish	7 7 8	7 2 4	0 5 4*I*	7 9 0		

and Kumeria and outpost Jhalda, by a cyclone which occurred on the 1st of November; in the Naraingunge and Sudder sub-divisions in *Dacca*, and in the Palamow sub-division in *Lohardugga*, the outturn was below average; in some parts of *Dinagepore* the crops were damaged; and in the sub-division of Bhadrak, in *Bulasore*, there occurred a partial failure. The detailed statement, of which the table furnished above is an abstract, shows that the price for rice was higher in *every* district during the whole or greater portion of the year, and that for pulses in 31 of the 45 districts. These, it will be recollected, are staple articles of diet of the people. But the drought, although it did not prejudically affect public health generally, will influence the health status of the localities affected for some time to come. In *Burdwan*, the present was the third year of inadequate harvest and the worst, as there was "next to no paddy to be cut or husked." In thanahs Bood-Bood, Shahebgunge, Montessur, Purbusthali and Mungulkote, and in some parts of thanahs Satgachi, Kulna, Cutwa, Katugram and Kaksa, great distress prevailed, especially among the labouring classes. The Magistrate, in visiting some of the affected tracts observed that many of the beggar class, the sick-poor, and the wives and children of men who were forced to leave their homes in search of work, were sadly pinched for food. Relief was administered to the sufferers, and special agencies for the distribution of charitable relief were started and continued during the last six months of the year. In this work Assistant Surgeon Jogobundhoo Gupta of Mankar and Assistant Surgeon Sasi Bhusan Mukerjee displayed great energy, care and economy. On the whole, however, beyond the want of food causing emaciation, "the general health of the people has not been very materially affected, and there has been no perceptible outbreak of any disease among the sufferers." In *Bankura* there is defective food-supply particularly among the labouring and cultivating classes, especially in the tracts along the banks of the river Damuda, where the crops failed totally. But the general health is stated not to have been yet affected. In *Birbhum* there was much distress among the same classes. To meet their wants charitable relief works were started in October and kept up until the winter harvesting had begun. Road cess works were also undertaken. The Magistrate of *Pubna* states that the deficiency of food was most marked in the north of the district, but was nowhere so accentuated as to cause any real distress; but the Civil Surgeon is of opinion that this deficiency had a disastrous effect in September on fever-stricken and weakly persons, and that defective nourishment and cold produced and kept up the complications of malarious fever, as evidenced by half of the dispensary patients and a large number of the jail admissions having splenic enlargement and malarious cachexy. In *Julpaiguri* it is suspected that sickness, especially of a malarious type, was partially due to high prices compelling the people to limit the quantity of their food, which lessened their power to resist the encroachment of disease. The report from *Gya* shows that anxiety is felt in only the Nawada sub-division, where a two-anna crop is expected, and in some parts of which the rice fields are as bare as a road. It is very sad to state that there occurred in this sub-division 38 cases of deaths of beggars, attributed solely to want of food. The health of the people generally was, however, good. In *Durbhanga* the high prices for food is seriously felt in several parts, particularly in the eastern portion of the sudder sub-division. Alna and soothni (root fruits), which form a subsidiary food in ordinary seasons, were resorted to as staple food during the drought, and thereby the people have tided over the difficulty. Relief works were in consequence started, and Government sanctioned a grant of Rs. 5,000 for the purpose. The general health of the people has not, however, yet been noticeably affected, but it is feared that, owing to a continuation of the drought and to deficient water-supply the tanks in the towns and several other localities in the district having run dry, sickness will be very widespread in 1885. In *Mozufferpore* the poorer classes suffered more or less, but serious consequences were averted by two falls of rain, one at the beginning and the other at the end of October. In *Monghyr* also the same cause, added to good distribution of rainfall, was "the saving of the district." In *Bhagulpore*, while the rich were pinched for food, the poor had to depend on inferior grain, such as *shama*, *cheena*, &c., &c. The distress which was felt in the Palamow sub-division, in *Lohardugga*, was staved off by a good *mahua* crop. In *Manbhum* had not the autumn (*bhadoi*) crop, especially Indian corn, produced fortunately an ample outturn, there might have been serious distress among the poorer classes.

SECTION VI.

HISTORY OF THE CHIEF DISEASES.

CHOLERA.

Extent of prevalence and fatality of Cholera.

34. During the year under review 134,421 persons, or at the rate of 2·03 per 1,000 of the registered population, were reported to have fallen victims to Cholera, as opposed to 90,439, or at 1·36 per 1,000, during the preceding year, and to 105,595, or at 1·59 per 1,000, during the lustrum 1879-83. It was, as usual, present in every district, and pervaded 24,621 villages against 16,316 in 1883, prevailing epidemically in 90 of the registering circles against 47, and with conspicuous severity in 90 against 64; while 432 against 491 circles enjoyed much immunity, and 37 against 46 were entirely free from the pest. These figures indicate that the disease was considerably more diffused and fatal than during the preceding year.

Comparative mortality from Cholera in Urban and Rural Areas.

35. The table in the margin shows the distribution of the casualties from Cholera between the Urban and Rural circles of the Province. The enhanced fatal results from the disease were, it will be seen, participated by both the urban and rural circles, but to a greater extent by the latter.

	In 1884.		In 1883.	
	Deaths.	Ratio per *mille.*	Deaths.	Ratio per *mille.*
Urban circles	9,390	3·81	8,993	3·64
Rural „	125,031	1·96	81,446	1·27

Districts which suffered most from Cholera.

36. Of the 45 districts, only 11 returned lower mortality from Cholera in comparison with the suffering of the preceding year; and the districts in which the disease proved most markedly fatal to life are the following 12, which exhibit death-rates ranging from 3·36 to 7·79 per 1,000 of population:—

Districts.	Ratio per *mille.*	Excess or deficit, as compared with 1883.	Districts.	Ratio per *mille.*	Excess or deficit as compared with 1883.
Balasore	7·79	5·67 *I*	Cuttack	4·16	2·21 *I*
Nuddea	5·79	1·10 *I*	Dacca	3·85	2·82 *I*
Faridpore	5·34	4·07 *I*	24-Pergunnahs ...	3·57	·10 *I*
Murshidabad	4·99	4·05 *I*	Poori	3·52	2·26 *I*
Rajshahye	4·95	3·40 *I*	Jessore	3·38	1·17 *I*
Backergunge	4·63	2·23 *I*	Pubna	3·36	3·18 *I*

Seasonal influence of Cholera in the entire Province.

37. The figures elucidating the seasonal fatality of Cholera in the entire Province are given in the margin in connection with the figures of the quinquennium 1879-83 and the rainfall in 1884. These figures again forcibly illustrate the influence of rainfall on Cholera prevalence. After the continued drought of October to December 1883 and January and February 1884, during which months the rainfall amounted to only ·99, ·12, 1·36, ·05 and ·79 inches respectively, there occurred a sudden and very marked rise in Cholera mortality in March, which prevailed with abiding severity during the two following months—April, with 2·63 inches of rain, exhibiting maximum amount of suffering. In May there fell 6·06 inches of rain and in June 12·04 inches, and in the latter month the fatality of the disease abated very considerably and the decline was progressive up to October. During June to October the rainfall was heaviest, amounting to 46·63 inches out of 57·56 inches, the aggregate fall of the year. November and December were months of very diminished rainfall, which amounted to only ·57 inches for both months, and during this period the disease displayed considerably enhanced fatality. There was, however, a peculiarity observable in the behaviour of the disease, viz. that while in 1883 November and December, with 1·48 inches of rain, were in

Months.	Deaths in 1884.	Months.	Deaths in 1879-83.	Rainfall in 1884.
April ...	30,785	May ...	14,733	2·63
May ...	20,124	June ...	14,583	6·06
November ...	15,993	April ...	14,534	·53
December ...	15,522	July ...	12,223	·04
March ...	10,567	December ...	9,491	·83
June ...	9,384	August ...	8,830	12·04
July ...	7 193	March ...	8,525	11·27
August ...	7,179	January ...	6,827	9·33
October ...	5,580	November ...	5,095	5·08
January ...	4,633	February ...	4,614	·05
September ...	3,780	September ...	3,159	8·91
February ...	3,731	October ...	2,982	·79

comparison with the other months of that year healthier, in the same months in 1884, with ·57 inches of rain, the suffering was very excessive. This is accounted for by the fact that the winter prevalence of the disease incidental to the Province was more general during the year under review, as 21 districts exhibited this phase of the disease during it against only 11 during 1883.

Seasonal prevalence of Cholera in Bengal, Behar, Orissa and Chota Nagpore.

38. *Bengal.*—There was no material difference in the seasonal incidence of Cholera in this division of the Province during this year in comparison with former years. As usual, it prevailed with marked severity during the months of March to May, and again during January and October to December, the intervening months, during which the rainfall was heaviest, enjoying much exemption. During the spring months the severity of the disease was felt most in the Western districts of this Division, in the Southern portion of the Central districts, and in the Eastern districts, particularly in the Dacca Division. The fatality of the winter outbreak was greatest in the Central districts, excepting its hill portion, and in the whole of the Eastern districts, while in the Western districts the loss of life was less. In the hill portion of the Central districts—in Darjiling and Julpaiguri—the prevalence of the disease was very mild throughout the year: in fact no fatal results occurred in the former district during January, February, May, and October to December, and in the latter during January to March and December.

Behar.—The months of severest suffering in this Division were, as usual, May to August; the period of heaviest rainfall, and the death-rates in all its districts, excepting Mozufferpore, Durbhanga, Chumparun and Purneah were high during these months.

Orissa.—The intensity of the disease in this Division was great throughout the year, but the months of maximum suffering were May to July and November. This is to some extent usual. It will be observed that there is a marked difference in the seasonal incidence of the disease in Orissa in comparison with Bengal. I will revert to this subject, and explain the cause when narrating the history of cholera in the Orissa districts.

Chota Nagpore—In this Division the disease exhibited greatest activity during April to August, the districts of Hazaribagh and Manbhum contributing to the enhancement, while Lohardugga and Singbhum enjoyed great freedom, no deaths occurring in the former during January to April and October to December and in the latter during January, August, September and December.

Prevalence of Cholera as delineated by the Cholera Map.

39. The map illustrating the distribution of Cholera in the Province, appended to this Report, presents the following features:—All the northern districts, viz. Chumparun, Sarun, Mozufferpore, Durbhanga, Bhagulpore, excepting its Sudder and Banka sub-divisions in the south, Beguserai the northern sub-division of Monghyr, Purneah, Darjiling, Jalpaiguri, Dinagepore and Rungpore were comparatively very free from Cholera. Similar exemption was enjoyed by the sub-divisions of Bishenpore in Bankurah, Jehanabad in Hughli, Dum-Dum and Bussirhat in the 24-Pergunnahs, Fenny in Noakhalli, Jehanabad in Gya, Bhabua in Shahâbad, Dumka in the Sonthal Pergunnahs, and the Sudder in Hazaribagh and by the entire districts of Lohardugga and Singbhum In all the above-mentioned areas the mortality was below 10 per 10,000 of population. On the other hand, the suffering was very great in the undermentioned sub-divisions, the deaths in them ranging from 32 to 92 per 10,000 of population:—

Districts.	Sub-Divisions.	Ratio per 10,000	Districts.	Sub-Divisions.	Ratio per 10,000.	Districts.	Sub-Divisions.	Ratio per 10,000.
Balasore ...	Sudder ...	92	Murshidabad	Jungipore ...	52	Khulna ...	Sudder ...	42
Nuddea ..	Meherpore	86	Backergunge	Sudder ...	49	Murshidabad	Lalbagh ...	41
Murshidabad	Sudder ...	76	Pubna ...	Sudder ...	48	Jessore ...	Jhenidah ...	36
Nuddea ...	Kushtea ...	71	Dacca ...	Manickgunge	48	Burdwan ...	Ranigunge ...	35
Faridpore ...	Madaripore	70	24-Pergunnahs	Sudder ...	48	Cuttack ...	Jajpore ...	33
Jessore ...	Magura ...	65	Nuddea ...	Chuadanga	47	Howrah ...	Sudder ...	33
Balasore ...	Bhadrak ...	61	Faridpore ...	Sudder ..	46	Manbhum...	Gobindgunge	33
Rajshahye ...	Sudder ...	61	Cuttack ...	Kendrapara	46	Dacca ...	Sudder ...	33
Backergunge	Patuakhalli	54	Backergunge	Perozepore	44	Sonthal Pergunnahs	Pakour ...	32
24-Pergunnahs	Diamond Harbour	53	Cuttack ...	Sudder ...	44	Faridpore ...	Goalundo ...	32
Dacca ...	Munshigunge	52	Poori ...	Sudder ...	44			
Rajshahye ...	Nattore	52	Nuddea .	Sudder ...	43			

40. Of the very large number of Fairs held in the districts outbreaks of Cholera occurred only in the following:—In *City Murshidabad* during the Mohurrum, when about 10,000 people were assembled, cholera broke out and caused about 100 deaths. All sanitary precautions appear to have been taken,—temporary latrines were provided; surface cleansing was attended to with regard to roads, lanes, serais, resting places, &c; washing of clothes in the river and otherwise polluting its water was prohibited, &c The Magistrate believes that this outbreak is referable to the "effect of dissipation and bad food." Two cases of Cholera and eight of Choleraic diarrhœa, none ending fatally occurred at the Mongalbund fair in *Dacca*, held on the 2nd and 3rd of April, among 95,000 people who had assembled from several districts, including Dacca. There were also 3,000 boats on the river. The people dispersed as soon as they heard of the outbreak. No report has been furnished as to the sanitary precautions which were adopted. Five cases of Cholera, attended with four deaths, occurred at the Kartick Barooni mêla held at Munshigunge in the same district. This fair lasted six weeks, from the 3rd of November, and the gathering numbered 141,413, the daily average being 3,282. There were 12,117 boats on the river. The sanitary precautions adopted were all that could be desired. At the Punasankranti mêla, held at Kuntollo, pergunnah Jhunkur, in *Cuttack*, cholera broke out, and six persons died. No special sanitary precautions had been taken.

Cholera at Fairs

41. The main facts connected with the incidence of Cholera in the districts and brief accounts of local outbreaks are subjoined.

Incidence of Cholera in the Districts.

BENGAL.

42. The returns show that in *Bengal Proper* 95,314 deaths were recorded as having occurred from Cholera among its population of 35,073,770 in 14·14 per cent. of the villages, and that the proportionate death-rate to population was 2·71 per 1,000. The casualty rate in the preceding year was 1·55 per 1,000 in 8·90 per cent. of the villages, and in the quinquennium 1879-83, 1·51 per 1,000 in 9·62 per cent of the villages. The comparison indicates that the disease pervaded a much larger extent of the country, and the mortality was considerably higher. Next to Orissa, the suffering was greatest in this Division of the Province.

Cholera prevalence in the Bengal Division of the Province

43. The Cholera statistics of the Burdwan Division of Bengal are presented below —

Cholera prevalence in the Burdwan Division

	Districts.	Percentages of Villages Attacked.		Mortality in 1884		Difference in 1884 in Death Rates as compared with—		Unhealthy Months
		In 1884	Excess or deficit as compared with 1883	Number of deaths.	Ratio per mille	1883	1879-83	
Western Districts.	Burdwan	9·29	3·[illegible]0 I	2,285	1·64	·38 I	·09 I	March to May
	Bankura	4·13	2·56 I	1,177	1·1[illegible]	·68 I	·26 I	Ditto
	Birbhum	6·71	5·00 I	1,108	1·16	1·09 I	·09 I	April May November and December
	Midnapore	7·15	·24 I	3,8[illegible]	1·[illegible]4	·05 I	·26 I	January to June and December
	Hughli, including Serampore	13·18	3·75 I	1,[illegible]90	1·55	·02 I	·28 I	February to May November and December
	Howrah	18·14	5·09 D	1,510	2·39	·61 D	·19 I	January to May and December
	Total	7·86	1·56 I	11,403	1·54	·25 I	·21 I	March to May and December

The figures indicate that in this Division 11,403 persons, or at the rate of 1·54 per 1,000 of population, succumbed to Cholera; that in connection with the periods with which comparison is instituted its prevalence was, on the

whole, more diffused and the casualty rate higher, but not excessively so; and that the disease was most active during the months of March to May and December.

44. *Burdwan.*—In this district a much larger number of villages, the excess being represented by a percentage of 3·30, were over-run by Cholera, and the mortality was higher by only ·38 per 1,000 of population in comparison with the preceding year, and ·09 per 1,000 with the lustrum 1879-83. March to May were the most unhealthy months, and in the areas named in the margin the largest losses of life were recorded. In Assensole thanah and Ranigunge town, which head the list, 33 per cent. of the total casualties of the year occurred. With reference to this high mortality the Joint-Magistrate observes:—"The streams of pilgrims and challans of coolies from the labour districts continued unabated. All along the Grand Trunk road and Poori road Cholera broke out, and for this reason, I think, the cause of the outbreaks may be safely attributed to the travellers on this road." The villages in several thanahs in Birbhum, Bankurah and Midnapore are also either directly on, or not far from pilgrim routes, and they should have suffered similarly if the above theory is correct. The Civil Surgeon of the neighbouring district—Bankura—has, however, as shown hereinafter, definitely expressed the opinion that the mortality from cholera in his district in 1884 had no connection with pilgrims, or rather that the disease could not be traced to importation by pilgrims. As the subject is an important one, I think it would be useful to examine it statistically. For this purpose, I submit in the subjoined table the death-rates from Cholera in 1884 and during the lustrum 1879-83 in Ranigunge and Assensole and in the above-mentioned districts, selecting those thanahs in them in which the mortality preponderated. In connection with this subject attention is also solicited to Cholera mortality during the same periods in Cuttack, Poori and Balasore, exhibited in the portion of the Report devoted to the discussion of the history of Cholera in Orissa.

	Ratio per mille
Assensole thanah	6 81
Ranigunge town ..	6 49
Kalna "	3 21
Khandghose thanah .	3 05
Ketugram ,	2·15
Ranigunge " ..	1·74

Ratio per 1,000 of Population

Districts	Circles		Jan. 1884	Jan. 1879-83	Feb. 1884	Feb. 1879-83	March 1884	March 1879-83	April 1884	April 1879-83	May 1884	May 1879-83	June 1884	June 1879-83	July 1884	July 1879-83	August 1884	August 1879-83	September 1884	September 1879-83	October 1884	October 1879-83	November 1884	November 1879-83	December 1884	December 1879-83	Annual 1884	Annual 1879-83
Burdwan	Ranigunge	Town		0 2			(1	1 (1	1 0	1 ?(	1 ·5	1 20	01	1 97		11		07		02	09		00	02		.	6 49	6 18
	Ditto	Rural		(1				07	3	·8	(1	18	44	18	08	20		·10		004					08		1 74	1 04
	Total			01			04	17	70	8	09	20	41	32	07	19		10		006	008		038	0001	08		2 10	1 48
	Assensole	R		008	02	02	(1	05	1	22	1 82	50	46	48		06	06	02		04		01			.	07	6 81	1 54
Birbhum	Birbhum	T						02		15		08		05		15		18		18	12	02			12		25	·74
	Ditto	R		03		0	03	13	10	03	01	04	19	03	20	18	008	09	06	·02		05	16	06	·34	15	1 12	74
	Total			0		05	03	09	16	01	01	04	12	03	18	09	007	01	06	03	007	07	15	06	33	14	1 05	74
	Bolepur	R		8		05	05	07	·2	14	18	05	10	19		27	10	23		05	02	01	41	02	60	·08	2 31	1 15
	Sakulipur			16	.	31		75	23	47	22	10	09	11	008	22	008	21	.	006		02	66	02	00	·29	1 82	2 67
Bankura	Bankura	R		0		·01	04	01	18	·01	23	08	35	25		17		11	.	01	...		·03	02	07	·04	·08	·81
	Gangajalghati			01		07	04	05	18	03	·13	·04	04	21	02	15		03		·02		002	.	01	...	·02	1·17	·68
Midnapore	Midnapore	R	007	01		10		08		08	41	10	11	·29	01	13		02		000	·01	02	·03		·08	·004	·63	·86
	Debra			07		07		04	21	08	01	07	02	13	01	08		·04		02		03		·01		·07	1 36	·73
	Contai ...		60	1	10	24	11	03	22	15	01	15	06	15		11		12	..	008		04	10	13	·42	·83	2 45	1 57
	Dantun		18	0	7	0	07	04		10	08	12	14	23	01	35	04	13		02	[illegible]	03	14	07	·11	·16	2 08	1 44
	Khajri		78	37	1 04	43	1 92	60	1 21	28	41	12		·33		98		35		11		06	·18	·17	·09	·85	5 64	3 28
	Masulandpore		37	28	54	11	13	28	1 01	40	08	9		17	06	12	17	07	01	04		13	22	·17	·69	·44	3 80	2 56
	Nundigram		33	22	13	12	34	14	68	13	10	05	04	19	008	26		08		05	03	06	03	20	·18	·83	2 99	1 90
	Potaspore		34	05	17	05	20	05		·02	01	07	56	17	34	08		05		02	.	02	·12	·07	·46	·21	2 23	·87

Before drawing deductions from the statistics presented in the above table, it is necessary to indicate the dates on which the festivals are held in Poori town, to which most of the pilgrims are attracted. This information is furnished in the margin, but it is important to observe that the most celebrated of the festivals to which the largest number of pilgrims flock is the

Festivals	Commences	Ends.	Number assembled about.
Shivaratra Jatra	25th February	26th February .	60,000
Melon or Dol "	11th March .	12th March ...	30,000
Chandan ,	28th April .	10th May ...	20 000
Ratha "	25th June ...	10th July ...	50,000
Jhulan "	2nd August ...	8th August ..	5,000
Punchak " .	30th October	3rd November	30,000

Rathajattra, and that this festival commences on the 25th of June and ends on the 10th of July. The months then during which the pilgrims would be passing through Birbhum, Bankura and Midnapore *en route* to Poori would be February to May, and the return journey would occur in July and August. Now, the conclusions which may be legitimately arrived at in connection with the subject under discussion from an examination of the data furnished in the foregoing tables are :—

(1)—That in point of intensity with which the disease prevailed during the period embraced by the table, there is no such agreement between Ranigunge and Assensole and the thanahs in Birbhum, Bankura and Midnapore, as, judged from either the aggregate or seasonal death-rates which occurred in the areas in question, would justify the inference that the high mortality in Ranigunge and Assensole is referable to pilgrimage independent of climatic influences, or local insanitary conditions, or the other unknown causes which produce the disease.

(2)—That as pilgrims *en route* to Poori pass first through Birbhum, then through Ranigunge, thence to Bankura, and last through Midnapore, whence they enter Balasore, the natural consequence would be, if pilgrims caused Cholera, that Birbhum would have presented noticeably high death-rates earliest, Ranigunge next, Bankura later, and Midnapore still later, but the figures in the table show that the months of conspicuous and maximum suffering were the same in Ranigunge, Assensole, Bankura, and Debra in Midnapore, viz. April and May, and what is more remarkable is that the earlier months of the year, January to April, were the months in which highest mortality is seen to have occurred in the other thanahs in Midnapore where pilgrims arrived last.

A further examination of the Cholera statistics of Birbhum, Bankura and Midnapore shows that several thanahs in them, not mentioned in the foregoing table, but through which pilgrims also passed, enjoyed great immunity from Cholera, while other thanahs in the same districts, which are not pilgrim routes, suffered severely—*vide* marginal figures.

THANAHS ON PILGRIM ROUTES.	Ratio per *mille.*
Bankura.	
Bishenpur	·61
Onda .	·85
Midnapore.	
Panchkura	·27
Garbetta	·64

THANAHS NOT ON PILGRIM ROUTES.	Ratio per *mille.*
Bankura.	
Soopore	3·66
Birbhum.	
Nulhati	2·57
Midnapore.	
Sutahatta .	2·21
Egra .	2·50
Raghunathpur .	2·13

Under the above circumstances, I think it unfair to infer that cholera is disseminated by pilgrims *per se*, or that they communicate the disease wherever they go. The fact is that when cholera, engendered by causes not yet definitely determined, and fostered by climatic influences or local insanitary conditions, is prevailing in any locality, pilgrims, if present there, suffer in common with the local residents, often more severely, owing to fatigue, old age, debility, bad food or water, crowding, &c.; but they do not import or communicate the disease. They, however, continue to suffer during their onward journey, if the wave of the disease is travelling in the same direction, and the people residing in the localities traversed by this wave also suffer along with them. The disease appears in places far removed from pilgrim routes, and it is during the dry months that it prevails with intense severity generally in every district in Bengal Proper, whether pilgrims are present in them or not during that period.

Of the seven Cooly depôts in Burdwan, only three were affected by cholera and they were closed. Rather smart outbreaks occurred in the collieries at Saktoria and Desherghur, but prompt measures were taken by the Managers to arrest the progress of the disease.

45. *Bankura.*—In this district also there occurred a further extension of the disease and higher mortality, the former involving an additional 2·56 per cent. of the villages, and the latter showing an increase of ·68 per 1,000 of population

contrasted with the death-rate in 1883, and ·26 per 1,000 with that in the quinquennium 1879-83. Exceptionally high casualties were returned by only the Bankura town (3·73 per 1,000) and Soopore thanah (3·66 per 1,000). The months of greatest suffering were March to May, the maximum being reached in the last-named month, followed, as in the preceding year, by almost total exemption during the rest of the months in all areas, excepting the Bankura town, where the winter prevalence of the disease was also somewhat severe. It may be here observed that the disease ran the course corresponding to the one followed in Lower Bengal generally, and exhibited no tendency to reach a maximum in July as in Orissa. The earlier outbreak in the Bankura town was a smart one, and occurred in March, decreasing till May, and disappearing then. Another noticeable outbreak occurred in thanah Khatra in January, with 72 deaths as a maximum, and running on with less severity into July. It is worthy of note that this thanah entirely escaped the scourge in 1883. The Civil Surgeon notes that the towns of Bishenpur and Sonamukhi enjoyed almost total freedom; but as these towns are in a notoriously insanitary condition, such immunity is not likely to continue long. There seems to have been no connection between cholera and pilgrims passing through the district in 1884, as the main road of travel almost entirely escaped, and no cases occurred in the numerous villages situated along it. The pilgrim road does not go through Bankura town, but passes outside and to the north, and pilgrims are prevented by the police from entering it. The first of the cases in the outbreak above referred to appeared in the eastern end of the bazar, adjoining the pilgrim road, but in the persons of resident Chumars, and there is no history of contact in any way with pilgrims.

46. *Birbhum.*—This district did not experience the like great immunity from Cholera, which it enjoyed during the preceding year. A much larger extent of country, represented by an additional five per cent. of the villages, was pervaded by the disease, and the death-rate was higher by 1·09 per 1,000 of population. The disease appeared in February, was active in March, and reached maximum severity in May, these being the driest months of the year. A decline was seen with the setting in of the monsoon, but in November and December the disease was again active, "daily counting its victims up to the close of the year." During the first outbreak the disease was chiefly confined to thanahs Dubrajpur and Nulhati, and the winter accession to thanah Labpur, but thanahs Bolepur and Sacoolipur suffered during both the visitations; and these thanahs, Dubrajpur and Labpur excepted, returned the highest death-rates, viz., Nulhati 2·57, Bolepur 2·31, and Sacoolipur 1·82 per 1,000 of population. The Rampurhat thanah again experienced great exemption, although the casualties were slightly larger. The sub-divisional officer reports that he considers it worthy of remark that his efforts to arrest the progress of cholera by disinfecting the affected localities with sulphur, prohibiting the use by others of the water of tanks resorted to by those attacked, throwing lime into the tanks, &c., should have proved successful repeatedly in dozens of villages. It was noticed that the prevalence of the disease was not confined to any particular village, but was spread over several villages, the combined mortality in which made the district death-rate high. Nor did it assume epidemic proportions anywhere, except in the villages of Bairee and Mohanpore, situated respectively in thanahs Bolepur and Sacoolipur where out of a population of 1,918 and 541, 89 and 60 died. The Magistrate reports that the disease was introduced into Shahpur, a village west of Elambazar, by some of the inhabitants on their return from a visit to Burdwan, and that it spread to an adjoining village, the people of which used to work in Shahpur. The outbreak at Bairee he attributes to the too early eating of new rice.

47. *Midnapore.*—In this district there was no tangible increase, either in the prevalence or fatality of cholera, the percentage of villages attacked being 7·15 against 6·91, and the death-rate 1·54 as opposed to 1·49 in the preceding year; but it is observed that the disease has been annually increasing since 1880. In seasonal fatality, Midnapore exhibits a difference as compared with all districts in the Burdwan Division, excepting Howrah, as high mortality is seen to have prevailed from the beginning of the year, abiding progressively to June. It should, however, be observed that the Cholera of this period was a sequence

to the cholera which prevailed in the last month of 1883. December was also an unhealthy month. Not a single circle escaped the invasion of the disease, and the highest suffering was experienced by those named in the margin. The circles numbered 2, 3, 4, 6 and 9 always suffer, and are said to be affected by the passage of pilgrims through them from the Gunga Saugor fair. As this fair is held in January and lasts about a week, and as the predominating mortality in these circles occurred in the earlier months of the year, a connection between cholera and pilgrims is probable, although not absolute.

		Ratio per mille
1. Midnapore town	.	5·89
2. Khajri thanah		3·64
3. Mushundpore thanah		3·89
4. Nandigram „	...	2·99
5. Egra „	...	2·50
6. Contai „		2·45
7. Roghunathpore „		2·43
8. Ghatal town		2·29
9. Pataspore thanah		2·23
10. Sutahatta „	..	2·21
11. Dantun „		2·08

In the Midnapore town, which ranked highest in cholera mortality, the outbreak commenced in January and lasted up to August, being excessively severe in April and May. Every mohullah in it was affected, and 527 persons were attacked, of whom 250 died. Especial care was taken to confine the passage of pilgrims to the route provided for them outside of municipal limits, and no cholera patient was admitted to the dispensary in the town. Hence the disease could not be referred to importation by pilgrims; but in one or two instances the first cases of the disease were found to have occurred in new arrivals (not pilgrims) from infected localities. It was noticed that the shop-keepers and lower classes of the people, who were indifferent regarding their water-supply, which was bad, and whose habits and surroundings were most objectionable in a sanitary point of view, suffered most, while those who were particular in these matters entirely escaped. With regard to thanahs Egra and Sutahatta, Assistant Surgeon Priumber Nath Mitter, Deputy Superintendent of Vaccination, Metropolitan Circle, says that the habits of the people in the former thanah are very filthy; that rotten fish is their daily food; and that its water-supply is in its worst state—and that Cholera is endemic in the latter thanah; that its conservancy is bad; and that, although the Huldi river drains it, there has been no flooding here for the last 20 years. The following facts, the result of the personal observations of the Civil Surgeon during this outbreak, claim attention, viz. (1) that of those who took their drinking-water from a tank or well supposed to have been contaminated with cholera poison, only about one in 20 were attacked by the disease; (2) that of the people who were exposed to the poison, whatever it was, which influence the progress and distribution of the disease, the bulk escaped, the number actually attacked being relatively very small; and (3) that while the above-mentioned outbreak and that of 1869, which occurred in the same localities and was also very severe, were preceded by prolonged deficient rainfall, causing the tanks and wells to fall very low, the drought of five months in 1871, when not a single drop of rain fell, and when the conditions considered to be specially favourable to the production of the disease—dryness and concentration of filth in tanks—also existed, was not followed by any unusual prevalence of cholera. The sanitary condition of the Midnapore town is bad, and no tanks have been set apart for drinking purposes. In the pilgrim route from Pooree eight cases of cholera among pilgrims were reported to have occurred at Dantun, a large village in the south, and one at Gurbetta in the north of the district. It should not, however, be overlooked that cholera is endemic in the district, and that its rise and fall correspond with those of Lower Bengal, and that the marked rise of June and July observed in Orissa is absent. It is worthy of notice that, as stated by the Civil Surgeon, since the water-supply of the Midnapore Jail was improved in 1881, only five sporadic outbreaks of cholera, each limited to a single case, occurred in it; that although during this period the disease frequently prevailed in the town, the jail was practically free from it; and that when it does appear it fails to spread. Anterior to this period the outbreaks "were formidable."

48. *Hughli.*—In this district 1·35 per 1,000 of the population died in 13·18 per cent. of the villages, against 1·33 per 1,000 in 9·43 per cent. in the preceding year, indicating that, on the whole, a much larger portion of the district was invaded by the disease, but unassociated with any excessive increase of mortality. Nevertheless, the mortality in the circles marginally named was

		Ratio per mille.
Serampore town	...	3·30
Uterparah „	...	6·53
Hughli „	...	2·68
Boidabatti „	...	2·58
Balágarh thanah	.	2·42
Serampore „	...	2·22
Hughli „	...	2·19

conspicuously high. The disease was present in the district throughout the year, but displayed the greatest activity during February to May, and again during November and December. From the list furnished above it will be seen that the Serampore town suffered the most. Here there occurred a sudden, severe, and very fatal outbreak in the bustees of Rishra and Mohesh (which are attacked annually), almost entirely among the coolies in the jute mills. It commenced on the 17th November and lasted for about three weeks, during which 214 persons were attacked, of whom 118 died. The bustees are densely crowded, are in an insanitary condition, and the habits of the people residing in them are filthy. I saw the place and found its sanitary condition very bad. It was noted that, although the coolies mixed freely with the Bengalis and others residing in the neighbouring bazar, and also frequented the market, held in the centre of these bustees, cholera did not affect those with whom communication was held, nor did it spread to other localities. Among the measures adopted to arrest the progress of the disease, which were attended with great benefit, the following may be noted,—burning wood fires and sulphur on a very large scale, closing an overcrowded burial ground, and covering the old offensive graves with waste jute a foot deep; setting fire to it, and then covering it a foot deep with ashes from the mills; putting a stop to corpses being only half-burnt on the banks of the river; covering the drains with quicklime; and preventing people from resorting to suspected tanks. Great credit is due to Mr. Collier, the sub-divisional officer, for personally supervising all the sanitary arrangements which were adopted to mitigate the severity and spread of the disease; to Dr. Barker, the Civil Surgeon, for the large share of personal labour which he devoted to visiting, taking care of and treating the sick; and to Mr. Finlay of the Hastings Jute Mills for supplying medicines, disinfectants and good water, and for personally aiding Mr. Collier and Dr. Barker in their work. The Uterparah town appears also to have suffered excessively, but no account has been furnished of the outbreaks which occurred in it. The sanitary condition of this town is very bad, and there is great need for a better water-supply than that afforded by the tanks, which are very foul.

49. *Howrah.*—In this district 2·39 per 1,000 of the population fell victims to Cholera in 18·11 per cent. of the villages. Compared with the preceding year, the suffering was less: but the disease was much more widely diffused, and the mortality considerably higher than in all the other districts comprising the Bardwan Division. As usual the disease, prevailed intensely during the months of greatest dryness, commencing from October 1883, increasing through the cold weather, lasting till May of this year, and reaching maximum severity in April. After this it declined remarkably in all areas. There was a second or winter visitation commencing in October, but its severity was confined to the Howrah and Bally towns. These towns also suffered most severely during the earlier outbreak and returned the highest death-rates, viz. 7·78 and 4·72 per 1,000 of population respectively. The Shampur thanah also suffered exceptionally, the mortality being represented by 3·00 per 1,000 of population. In the Howrah town the largest number of cases of cholera occurred in the Golabari and Howrah wards, and the Magistrate says that the severity of the disease would have been greater had not the Municipality made strenuous and successful exertions to supply the dried-up tanks with water. The Civil Surgeon is of opinion that an abundant and pure water-supply would no doubt mitigate the ravages of cholera in this town. With regard to Bally, Dr. Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, reports that he found the water-supply of the town bad, as a large number of the tanks were in a filthy condition, admitting surface drainage, and the river water, with a considerable amount of silt, passes into some of the tanks through a badly constructed drain with faulty level during spring tide, owing to the sluice put up to prevent this being out of order. He also noticed that one of the trenching grounds situated in this town, but belonging to the Howrah Municipality, was in a most scandalous condition, quantities of filth being thrown about instead of being buried, and when buried the process was so imperfect that the decomposing filth bubbled up through the loose earth. The conservancy arrangements were also not quite satisfactory.

Cholera prevalence in the Presidency Division.

50. The subjoined table furnishes the specific facts connected with Cholera prevalence in the Presidency Division:—

Districts.	Percentage of Villages Attacked. In 1884.	Excess or deficit as compared with 1883.	Mortality in 1884. Number of deaths	Ratio per mille.	Difference in 1884 in Death Rates as compared with— 1883.	1878-83.	Unhealthy Months.
Central Districts (South) 24-Pergunnahs	18·16	2·04 *I*	6,698	3·57	·10 *I*	·98 *I*	January to June, November and December.
Nuddea	40·72	5·81 *I*	9,591	5·71	1·10 *I*	2·27 *I*	January to May, November and December.
Jessore ...	20·18	4·82 *I*	6,563	3·38	1·17 *I*	[illegible] *I*	January to May, November and December.
Khulna ...	28·44	11·25 *I*	2,851	2·64	1·08 *I*	·33 *I*	January, March to May, November and December.
Murshidabad	22·35	15·97 *I*	6,128	4·99	4·08 *I*	3·53 *I*	March to May, November and December.
Total ..	24·29	7·12 *I*	31,832	4·09	1·34 *I*	1·65 *I*	January to May, November and December.

This table shows that in the Presidency Division of Bengal the number of casualties caused by Cholera amounted on the whole to 31,832, yielding a death-rate of 4·09 per 1,000 of population; that a much larger extent of the country was invaded by the disease, and the mortality considerably higher than during the preceding year; and that the months which presented the most casualties were January to May, and again November and December, the earlier visitation not constituting a fresh outburst, but a continuation of the Cholera which was prevalent during the last months of the preceding year. It should be noted that the suffering in this area was the highest in comparison with all the divisions in the Province, Orissa only excepted.

51. 24-*Pergunnahs*.—In this district Cholera carried off 3·57 per 1,000 of the population in 18·16 per cent. of the villages. Compared with 1883, it is seen that an additional 2·04 per cent. of the villages was traversed by the disease, and that there was an increase in mortality to the extent of ·10 per 1,000 of population. The disease was present during every month with varying intensity, but the worst months were January to June and November and December. It attacked all the circles and was most fatal in the 18 named in the margin. The Suburbs of Calcutta again heads the list with an increase in mortality of nearly one per 1,000 of population, as compared with the death-rate of 1883. The mohullahs in it which formed the scene of greatest suffering were Balliaghatta, Entally, Bhowanipur and Watgunge. This Municipality was specially inspected by me and found in an extremely insanitary condition. A report embodying the defects and indicating remedies was sent to the Commissioners, and a copy thereof submitted to Government. An abstract of this report, with a note of the action taken by the Commissioners on the suggestions therein made, will be found in Appendix III to this Report. Some of the officers of the Vaccination Department visited the Suburbs of Calcutta, and several of the other localities where exceptional mortality from cholera occurred. Assistant Surgeon Priumber Mitter, Deputy Superintendent of Vaccination, Metropolitan Circles, records the following observations in connection with some localities in the Suburbs and in the North and South Suburban Towns. *Manicktollah* is the most filthy part of the Suburbs, the land behind houses being used as public latrines. In fact, all the bustees in this area are in an extremely insanitary condition from *fæces* and house refuse lying on the roadsides, lanes and bye-lanes, and the ponds, hollows, and low lands being the receptacles of liquid sewage and filth. *Garden Reach*.—All the bustees here are in a similar insanitary condition with regard to conservancy, drainage, roads, &c. *Sett Bagan and Ghose Bazar*.—In these and the neighbouring bustees foul water holes, containing decaying vegetation, abounded; there are many filthy private privies; the water in two large tanks was filthy, green in colour and turbid, and two of the smaller ones were covered with

	Ratio per mille		Ratio per mille
Suburbs of Calcutta	9·62	Nawabgunge town ..	3·33
Kulpi thanah	7·92	Canning thanah .	3·30
Mathurapur „	7·55	Rajpur town	2·74
North Suburban town .	6·23	Naihatti thanah	2·30
Naihatti „	6·17	Augurpara town .	2·28
Joynagar thanah	4·41	Diamond Harbour thanah	2·21
Debipur „	4·16	Sonarpore „	2·19
Barripur „	4·02	Tallygunge ,	1·91
Bankipur „	3·87	South Suburban town .	1·91

decomposing plants, their sides lined with rank vegetation, the water in them "appearing like vegetable decoction emitting disagreeable odour." *Ballygunge.*—Here the waste lands were found to be covered with litter and other refuse, and were resorted to for defœcation. *Gungarambusti and Wolfutbazar.*—These were found in their usual state of uncleanliness without any arrangement for the removal of sewage and refuse. *Matiabrooj, Mooriali, and Kanchisharak* were so crowded as to prevent free perflation of air, and their courtyards and compounds were extremely filthy. In *Ekbalpore* some of the drains were filthy and obstructed, and the cowsheds full of decomposing litter and refuse. *Baniapooker.*—Here the drains were filthy and emitted a sickening odour, and the ditches and low lands covered with *fæces*, rank vegetation and refuse of every description. The water-supply in all its bustees was bad, drinking-water being taken without any regard as to its quality; many of the houses were deficient in ventilation, the ground about them damp, and no arrangements existed with regard to house scavenging. *Bhowanipore*—This place was in an indescribably insanitary condition, and its bustees do not admit of free scavenging. The tanks are foul and the drains, with few exceptions, are defective in level. *Watgunge.*—Some of the ditches here contained weeds, house sweepings, and human excreta, and the receptacles in one of the latrines were overflowing with *fæces* emitting an abominable odour. *Kalighat in Tollygunge.*—Although some improvements had been effected, the sanitary condition of this locality is yet very defective with regard to scavenging, cleanliness, ventilation and crowding of huts. The latrines were most filthy, the vessels in them overflowing with decomposed bubbling *fæces*, seats unclean, and the latrine too near a much-used tank belonging to the police. The remarks of Dr. Ghose, the Officiating Deputy Sanitary Commissioner of the Metropolitan Circles, who also visited most of the above-named localities, are equally condemnatory. His reports also expose many extremely insanitary conditions obtaining at Cossipore, Baranagore, Barripore and Joynuggur thanahs, and Baraset Municipality. I would be extending my Report to an undesirable length were I to reproduce all the defects disclosed in the reports of the officers of the Vaccination Department. It will suffice to say that the above description applies *mutatis mutandis* to several other localities in the Suburbs, one of the largest and most important of the Municipalities in Bengal, and to other towns and thanahs in the Province. It may be noted here that some judicious recommendations made by Dr. Ghose, after careful inquiry and inspection of several bustees in the Suburbs, do not appear from his later reports to have been followed by any action on the part of the municipal authorities.

52. *Nuddea*, with a death-rate of 5·79 per 1,000 of population, occupies the second place in the list of cholera-stricken districts. Its death-rate exceeds that of the preceding year by 1·10 per 1,000 of population, and that of the lustrum 1879-83 by 2·27 per 1,000, and was, in fact, higher than the casualty rate of any individual year since 1876, excluding 1882. The disease also prevailed very extensively, overrunning 40·72 per cent of the villages, which proportion exceeds that of 1883 by 5·81 per cent. The localities marginally named exhibited the highest mortality. During the opening month of the year the scourge was present in several thanahs; in the second month it invaded a considerably larger number of them, and, progressing in activity, attained maximum intensity in April, when every circle was affected. After April its severity subsided, so that in June the district was comparatively free from the pest, and this immunity continued throughout the rainy months; but with the advent of the cold weather an invasion again occurred which, continuing up to December, passed on to 1885. This is the usual behaviour of the disease in this district. On the whole, its severity this year is attributed to bad water-supply, which was general throughout the district owing to scanty rainfall causing the tanks and water reservoirs to run very low, to defective drainage, to the filthiness of the villages, and to want of wholesome

	Ratio per *mille.*		Ratio per *mille.*		Ratio per *mille.*
Gangni thanah ...	17 27	Jibunnagor thanah	6·53	Chuadanga thanah	4·30
Kushtea „ ...	9·13	Tehatta „ ...	6·43	Ranaghat „ ...	4·22
Nowpara „ ...	8·84	Kalligunge „ ...	5·46	Krishnagunge „ ...	3·85
Dowlutpur „ ...	8·35	Bhadulia „ ...	5·39	Bhaluka „ ...	3·45
Meherpur „ ...	7 18	Kurreempore „ ...	5·36	Kushtea town ...	3·39
Nakasipara „ ...	7·04	Nobodip town ...	5·24	Hanskhalli thanah	3·08
Alumdanga „ ...	6·80	Meherpur „ ...	5 23		
Kumarkhali „ ...	6·59	Kishnaghur thanah	4·40		

food. In Gangni, which suffered excessively, the water was taken from the pools in the khals into which only local drainage enters, and in which bathing, both by men and cattle, is carried on. There is a great want of wells in this district, and the people object much to the use of well water, and their objections are natural, considering that the wells are shallow—mere holes on the village site—and the water in them brackish and contaminated with filth. Should, however, wells be sunk to tap the deep water-bearing stratum, as recommended by Mr. Hughes, lately Superintending Engineer of the circle in which Nuddea lies, I have no doubt that the people would gladly avail themselves of the pure supply. A limited experience of a few good wells supports this view. It was observed that the Mahomedans in some of the villages buried their cholera dead near their houses. Considering the little depth at which corpses are interred, the practice is productive of infinite harm. In the sub-division of Ranaghat, which also ranks high in Cholera mortality, good water was also scarce, and the bhils from which a large section of the people draw their drinking supply had silted up. The sub-divisional officer attributes the prevalence of the disease to these causes, combined with the general insanitary condition of the villages. The Magistrate, Mr. Hopkins, referring to the causation of the disease, writes:—"I am inclined to think that the disease has very little of cholera in it, but is the result of the hot weather acting on the absolutely poisonous water and sometimes poisonous food indulged in by the people"; and further on in his report he pertinently observes that "there is no doubt that some one in these large flat districts ought to have summary powers to remove obstructions to the water-supply, to create obstructions to floods and inundations, without being liable afterwards to the wrong of civil litigation. At present it is impossible to get through all the formalities of the law under something like six months. District officers should be given the power to do good, and they would do a great deal more good than harm. They have not the time to report and make estimates and surveys in urgent cases, nor will they willingly undertake the responsibility of proceeding under section 25, Act II (B.C.) of 1882 [relating to embankments and water-courses] for even if they satisfy themselves of the imminent danger, the responsibility of satisfying others, after the fact, is disagreeable and precarious." The Nobodip town, in which 5·24 per 1,000 of the population fell victims to Cholera, is in a very insanitary condition. It is not provided with public latrines; there are about 400 well-privies, 15 to 20 feet deep, in it, from which the excreta is removed at lengthened periods, and then only buried in close proximity to them at a depth of eight to ten feet; the drainage is defective, all the drains being kutcha and the receptacles of the filthy contents of the house drains; and interments take place in the compounds of the houses. These are the chief defects. Moreover, being regarded as a sacred place, it is visited by a large number of pilgrims, for whom there is no special accommodation. The Meherpur town, which recorded a death-rate equal to that of Nobodip, is similarly badly sanitated. There is no house scavenging; no public or private latrines; there are about a hundred well-privies, which are very seldom cleaned owing to difficulty of obtaining mehters; the drainage is defective. The Bhyrub river has silted up and its water become stagnant, and the wells afford a scanty supply. The only fairly good water obtainable is from the municipal tank. Preliminary steps have been taken to open out the mouth of the Bhyrub in the Meherpur sub-division, and to form a junction of the Kistopur and other bhils with the Gorai river in the Kushtea sub-division.

53. *Jessore.*—The prevalence of Cholera in this district resulted in a death-rate of 3·38 per 1,000 of population in 20·18 per cent. of the villages, as opposed to the death-rate of 2·21 per 1,000 and 15·36 per cent. of villages attacked in the preceding year, indicating an increase in both the diffusion and fatality of the disease. Its seasonal incidence corresponded with that in Nuddea, and the marginally noted circles experienced the greatest suffering. The local reports again furnish no special information bearing on the severity with which the disease

	Ratio per *mille.*		Ratio per *mille.*
Salikha thanah ...	7·35	Salkopa thanah ...	3·96
Kaligunge " ...	7·01	Sarsha " ...	3·59
Ganrapota " ...	6·48	Lohagarra ...	3·21
Muhammadpur " ...	6·44	Bagherpara " ...	3·17
Magura " ...	6·35	Kalia ...	3·01
Harinakunda " ...	5·66	Kotchandpur thanah ...	2·90
Jessore town ...	4·00		

prevailed in these circles. It may, however, be mentioned with regard to the town of Jessore that its unhealthiness is in some measure due to the insanitary conditions obtaining in it, for the general conservancy is not properly attended to; the privies are filthy, the attendance of the mehters being irregular; the night-soil is not properly trenched; the drainage is defective, as most of the drains are mere open ditches, and some of the bazar drains are obstructed by refuse from shops, the culverts being used as receptacles for rubbish; very nearly all the tanks contain organic matter, being open to every description of pollution; and the graves are not dug sufficiently deep, so that the openings made by jackals to obtain access to the corpses emit gases deleterious to health.

54. *Khulna.*—In this district also the prevalence and fatality of Cholera were considerably greater, the former extending over an additional 11·25 per cent. of the villages, and the latter involving an increase in death-rate to the extent of 1·08 per 1,000 of population. The fourth quarter of the year was the most, and the third quarter the least unhealthy, as was the case in the two preceding years. The disease was nowhere epidemic, but it prevailed in sporadic form simultaneously in different parts of the district. Nevertheless, in the marginally named circles it proved conspicuously fatal. In the Khulna thanah, out of a total of 3,233 deaths, 203 were recorded in one month,—November. No account has been furnished by the local officers in connection with the high mortality in these circles. Dr. Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, however, records that Cholera is a regular visitor in several villages in thanah Kaligunge, and that, although the rivers and khals of the place facilitate drainage, the water-supply is bad. It might be mentioned that the outbreak of cholera in the town of Khulna among the coolies in the Government brick-fields, referred to in the last year's report, and which continued to prevail up to January of this year, was found to have been originated by the affected drinking water from a small tank which was suspected to have been polluted with cholera poison, as evidenced by the fact that the disease disappeared soon after the closing of this tank against the public, and that the servants of the Sessions Judge on circuit, who drank the water of this tank notwithstanding the prohibition, were all attacked by bowel-complaints, and two by cholera.

	Ratio per *mille.*		Ratio per *mille.*
Khulna thanah ...	5·15	Paikgacha thanah	3·20
Dumuria „ ...	3·96	Mollahat „	3·18
Biataghatha „ ...	3·33	Kaligunge „	2·69
Bagirhat „ ...	3·25		

55. *Murshidabad.*—In this district the incidence of the disease was very severe, as the casualties were greater by over five times the number of the preceding year; the death-rate amounting to 4·99 per 1,000 of population against ·96 per 1,000. The extent of country invaded by the disease was also considerably greater, 22·35 per cent. of the villages having been attacked against 6·38 per cent. The Civil Surgeon notes that, although usually endemic, the disease assumed epidemic proportions this year. There were two severe outbreaks, the first commencing in March, reaching maximum severity in April (when 3,188 or more than half the total casualties of the year occurred), and continuing with severity during the next month, disappeared almost entirely after that month. The second invasion took place in October, attacking at first a few of the thanahs, and continued to the end of the year, proving most fatal in November, when a large majority of the circles was involved. That the disease was severely widespread is seen from the fact that on the whole 19 (named in the margin) of the 27 circles in the district presented very high death-rates. The severity of the disease is generally referred to scanty rainfall, it being, it is said, an observed fact in this district that epidemic outbreaks of cholera are more frequent and more severe when there is less moisture in the earth. In the Jungipur town the Baliaghatta ward suffered the most, but the spread of the disease was, it is stated, arrested by improving the conservancy arrangements, which were very objectionable, there

	Ratio per *mille.*		Ratio per *mille.*
Jelingh thanah ...	15·17	Doulatbazar thanah ...	4·92
Goas „ ...	10·68	Suti „ ...	4·61
Jungipur town ...	8·73	Barwan „ ...	3·88
Shamsherganj thanah ..	6·67	Nowada „ ...	3·67
Sujaganj „ ...	6·35	Shahanagar „ ...	3·46
Mirzapur „ ...	6·28	Manulabazar „ ...	3·03
Bhagwangola „ ...	5·76	Hariharpara „ ...	2·76
Assanpur „ .	5·63	Bharatpur „ ..	2·76
City Murshidabad ...	5·42	Raghunathganj „ ...	2·67
Dewanseria thanah ..	5·30		

being no public latrines, the night-soil not being effectually dealt with, if at all, and surface cleansing unattended to. In the Jungipur sub-division in all the thanahs (Raghunathganj, Dewanserai, Shamsherganj, Suti and Mirzapur) in which the mortality was very great, the water in the Bhagirutti river becomes stagnant during the hot weather, and that in the tanks is contaminated by bamboo leaves falling into them. The local reports do not furnish any special information regarding the rest of the very large number of severely stricken areas.

Cholera prevalence in the Rajshahye Division.

56. The figures indicating the incidence of Cholera in the Rajshahye Division are submitted in the subjoined table:—

		Percentage of villages attacked.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
		In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per *mille*.	1883.	1878-82.	
Central Districts. (South.)	Dinagepore	2·10	·57 *I*	481	·31	·11 *D*	·10 *D*	November and December.
	Rajshahye	17·39	10·65 *I*	6,628	4·95	3·40 *I*	3·55 *I*	January, March to June and October to December.
	Rungpore	2·87	1·25 *D*	1,163	·55	·16 *D*	·37 *D*	November and December.
	Bogra	8·06	6·33 *I*	1,398	1·90	1·57 *I*	1·03 *I*	October to December.
	Pubna	15·92	14·34 *I*	4,414	3·36	3·18 *I*	1·98 *I*	March to May, October and November.
Central Districts. (North.)	Darjiling	1·16	6·89 *D*	27	·17	1·95 *D*	·36 *D*	August.
	Julpaiguri	2·60	17·27 *D*	205	·35	3·82 *D*	·61 *D*	May.
	Total ...	7·75	3·82 *I*	14,316	2·97	3·82 *I*	1·25 *I*	March to May and October to December.

This table shows that, with varying incidence in individual districts, both the extent of prevalence and fatality of Cholera were on the whole greater than in the preceding year in the Rajshahye Division; that to this increment the Rajshahye, Pubna and Bogra districts contributed mainly; and that the disease was most active during March to May, and again during October to December.

57. *Dinajpur* enjoyed, as in 1883, much immunity from Cholera, and while there was a small increase in area attacked, the mortality was lower. The total death-rate amounted to only ·31 per 1,000 of population, and this occurred in only 2·10 per cent. of the villages. Dr. Mukerjee refers the causation of the disease to inter-river communication of the affected villages with contiguous localities where the disease was present, and to contaminated water-supply. Of outbreaks due to the first mentioned cause, which had been previously enquired into by him, the following connected with a severe outbreak in Chintamon and its neighbouring villages may be cited. A woman had gone across the river Mohanunda to village Ashapore, in Maldah, where the disease was raging, to nurse her cholera-stricken grand-child. The child died. On her return with her clothes soiled by cholera excreta, &c., of her grand-child, her husband was attacked, and the disease spread into the neighbouring houses, which were close to each other. It was ascertained that soiled clothes, &c., were washed in the river, and that its water was used for all purposes. Dead bodies had also been thrown into the river, or buried on its banks.

58. *Rajshahye.*—The mortality in this district was very great. The disease invaded a considerably larger number of villages, represented by 10·65 per cent. of additional villages, but on the whole it was not very widespread, as only 17·39 per cent. of the total villages were affected. The mortality, however, was very high—4·95 as opposed to 1·55 per 1,000 of population in 1883. The severity of the disease was manifested twice—once during January to June, and again during October to December—but it was most virulent during April and May. It was present in every circle, and caused great loss of life in the majority of them, viz. the ten named in the margin out of 14 in the district. The high mortality of the year is attributed to the water-supply having become deteriorated by silting up of the channels communicating with the Ganges, and to this evil having been intensified by the

	Ratio per *mille*.		Ratio per *mille*.
Beauleah town ...	14·45	Borigram thanah ...	5·61
Lalpur thanah ...	13·74	Godagari „ ...	5·38
Beauleah „ ...	9·90	Panchupur „ ...	3·19
Charghat „ ...	7·94	Nattore „ ...	2·96
Putia „ ...	6·96	Baghmara „ ...	2·83

diminished rainfall of three successive years having caused many large tanks to dry up during the hot season, thus compelling the people to use any available water. The severity of the disease in the Beauleah town was very high. It embraced the whole town, but, it was observed, that it was not very prevalent in the tracts on the banks of the river, where of course the water was plentiful, and certainly better than that from the dried-up tanks. But grave sanitary defects exist in this town; surface cleansing is not completely attended to; well-privies still exist, though to a limited extent; the public latrines are not generally used, the people preferring to resort for defœcation to a chur; sewage, ashes, house refuse, street sweepings, &c., are allowed to find their way into the roadside drains, which during the rains get dissolved and enter the tanks; excepting the reserved tanks, all the others are contaminated with surface drainage; and it is suspected that the Hindu pauper dead are thrown into the river, as no special arrangements exist for their disposal. In the Nowgaon thanah, which, on the whole, suffered least, the disease was very severe during the last quarter of the year, "when decomposed fish is most abundant."

59. *Rungpore.*—In this district the incidence of the disease was light, only ·55 per 1,000 of the population died in 2·87 per cent. of the villages. What cholera there was prevailed sporadically, but in November and December it displayed noticeable activity in the Govindganj and Nageshwari thanahs. The last-named thanah appears to be always suffering. It was observed that in May, when the rainfall was greatest, cholera prevailed least.

60. *Bogra.*—In this district Cholera prevailed with considerably enhanced severity, as the death-rate amounted to 1·90 per 1,000 of population, against ·33 per 1,000 in the preceding year. Although a larger percentage (6·33) of the villages were affected, the disease was not very widespread, as only 8·06 per cent. of the total villages was affected. Excepting the months of October to December, during which the bulk of the mortality took place, all the other months were comparatively free from the disease. The circles indicated in the margin furnished the highest death-rates. The prevalence of the disease was referred chiefly to scanty and bad water-supply. The former was caused by very deficient rainfall, and by the cultivators endeavouring to keep their young paddy crops alive by irrigation, and the latter by people steeping jute in the water. The use of bad and insufficient food, due to high prices for food-grains, is also believed to have caused an increase of the disease and consequent mortality.

	Ratio per *mille.*
Bogra town	3·72
Shariakandi thanah .	3·36
Dhunut	3·13
Sherpur	2·99

61. *Pubna.*—The immunity from Cholera which this district enjoyed in 1883 was not experienced this year, for the disease was considerably more widespread and fatal. The death-rate amounted to 3·36 per 1,000 of population in 15·92 per cent. of the villages, as opposed to ·18 per 1,000 in 2 per cent. The disease was present in the district in severe form during March to May, and again during October and November, being most active during the former period. Every circle returned higher death-rates, and those noted in the margin suffered the most. The cholera of this year commenced on the 3rd of January at Sara, the terminus of the Northern Bengal State Railway. It was of a severe type and alarming in the rapidity with which it spread from village to village, not attacking localities in succession, but spreading from distant centres until it covered all the intermediate places. Dr. ffrench-Mullen, who visited the locality, attributed the outbreak to the foul condition of a bhil or back-water of the Ganges, the water of which was used for drinking by the people of the affected villages. The local opinion is, that the disease was imported by Assamese emigrants. Dr. Dutt, the Civil Surgeon, found no evidence to support this opinion, but it appeared to him that from the contiguity and freedom of communication of the villages in question with the Rajshahye district, where the disease was very prevalent, the outbreak was an extension from that district. In the Pubna town there occurred 37 cases of cholera from the 8th to the 24th of April; but the medical and

	Ratio per *mille.*		Ratio per *mille.*
Pubna thanah ...	7·85	Raiganj thanah ...	4·38
Pubna town	6·87	Dulai " ...	3·82
Chatmohar thanah ...	4·66	Serajganj " ...	2·40

sanitary precautions which were adopted, at the suggestion of the Civil Surgeon, were followed by the arrest of the disease with 27 recoveries and 10 deaths. During another outbreak, which commenced on the 21st October and lasted to the 29th December, when 75 persons were attacked, under similar precautions 26 died and 49 recovered. The long resistance of this Municipality to the extra-mural burial of the dead, I have no doubt, partially accounts for these frequently recurring outbreaks of cholera. From the Magistrate's report I learn that the water-supply in this district is very deficient and highly polluted by the steeping in it of jute and hemp. The latter process causes greater deterioration than the former, as it takes place in the cold weather when the streams are lower and cannot be flushed by floods. It is, moreover, a common practice to burn dead bodies on the banks of bhils or old river courses, the water of which is used for drinking purposes.

62. *Darjiling.*—This district enjoyed great immunity from Cholera this year. The death-rate amounted to only ·17 per 1,000 of population in 1·16 per cent. of the villages, against 2·12 per 1,000 in 8·05 per cent. in 1883. The disease was almost confined to the plains—as in the hill tracts only one death occurred in the Darjiling town, six in the Darjiling rural area and no deaths in Kalimpong. Cholera having broken out twice on the Hope town spur, I instructed the Deputy Sanitary Commissioner, Darjiling Circle, to make an enquiry in all future cases of Cholera into the circumstances under which the disease breaks out, and to furnish a detailed account of the sanitary defects relating to drainage, conservancy and water-supply, specially to the fouling of the source by which water is conveyed from Sonadah; of the condition of the bazar and the quality of the flesh sold for consumption by the coolies. I also asked the Deputy Commissioner to direct the Civil Officers to bring to the Deputy Sanitary Commissioner's notice, for this purpose, all outbreaks of Cholera as they occur.

63. *Julpaiguri.*—Here also a very considerable reduction occurred in both the prevalence and fatality of Cholera, which was present in only 2·60 per cent. of the villages, against 19·87 per cent. and exhibited a death-rate of only ·35 per 1,000 of population against 4·17 per 1,000. The disease was almost limited to the Sudder sub-division, the Duars nearly escaping. In the former area Kairanti, Silliguri and Patgram suffered somewhat severely, the deaths in them amounting to 1·01, ·86 and ·83 per 1,000 of population respectively. As in former years, the disease appeared in April and became active in May and June and disappeared in November, the outbreaks of this year are referred to the generally insanitary condition of the district: the conservancy is bad; the drainage defective, so that during the rains all the low lands are flooded. The water consequently stagnates and decomposes and the evil is aggravated by the steeping of jute in it. This water is drank by the people.

Cholera prevalence in the Dacca Division.

64. The following table furnishes the Cholera statistics of the Dacca Division of Bengal.

	Percentage of Villages Attacked.		Mortality in 1884.		Difference in 1884 in Death-Rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per mille.	1883.	1879-83.	
Eastern Districts. (Dacca Division.) Dacca	20·73	17·16 *I*	8,165	3·85	2·82 *I*	2·23 *I*	January to May, October to December.
Faridpore	29·53	17·23 *I*	8,725	5·34	4·07 *I*	3·55 *I*	January to May, October to December.
Backergunge	34·50	8·19 *I*	8,810	4·63	2·23 *I*	2·53 *I*	January to May, November and December.
Mymensing	13·31	4·65 *I*	6,374	2·08	·82 *I*	1·18 *I*	April to June, November and December.
Total ...	23·15	10·95 *I*	32,074	3·68	2·23 *I*	2·18 *I*	January to May, October to December.

These figures indicate that in this division Cholera invaded a much larger area and caused considerably higher mortality, the Faridpore district mainly contributing to the increment. The worst months were January to May and October to December.

65. *Dacca.*—Cholera prevailed in this district with greatly enhanced severity in comparison not only with the preceding year, but also with the preceding seven years. It carried off 3·85 per 1,000 of the population from 26·73 per cent. of the villages, which exceeds the mortality of 1883 by 2·82 per 1,000, and of the lustrum 1879-83 by very nearly the same proportion. Its seasonal incidence corresponded with that of former years. It was severe in December 1883, and abating somewhat through January and February of the year under report, again increased in March and attained maximum intensity in April. In May it declined very sensibly, and during the next four rainy months it was practically extinct. In October it resumed activity and continued so till the end of the year, exhibiting in November a death-rate almost equal to that of April. A variation in the course followed by the disease was observed in the Dacca town, as July, August and September (months usually free from Cholera) were also very unhealthy. The same was the case in 1882, and it is remarked that "both years were characterised by the lowness of the inundation, high flooding of the country being incompatible with Cholera epidemics." The circles named in the margin returned the highest death-rates. The outbreaks of Cholera in the Munshiganj and Manikganj sub-divisions (thanahs Munshiganj, Manikganj, Jafferganj, and Harirampur) are referred to want of good drinking-water, the reservoirs having become stagnant and foul from rotten vegetation, which could not be washed away, as the country was not under water as in former years owing to deficient rainfall. Moreover, in the latter sub-division the silting up of the rivers interferes with its natural drainage. The Collector of Dacca observed during his tour that in thanah Harirampur, that even in August, when the water was at its height, it stunk and seemed unfit for drinking purposes directly the khal is passed, and that in the dry months the condition of the khal itself is the same. He therefore does not consider it surprising that Cholera breaks out very severely in this thanah. It was noted that, while Cholera was at its height in the Munshiganj thanah from October to December, at the Kartick Baroni mêla, held in that thanah from the middle of November to the end of December, and which was thronged with people from the neighbouring villages with a very large number of boats lying alongside and plying up and down the river, only five cases of cholera, four ending fatally, occurred, although during its height a severe epidemic of the disease existed in a large village less than a mile from it, and ten deaths occurred in two days in another village two miles distant in the middle of December. The mortality from cholera in the Dacca town had risen from ·59 per 1,000 of population in 1883 to so high as 2·88 per 1,000 this year, indicating that a good partial water-supply (although it confers great benefit) is not itself sufficient to arrest the inroads of the disease, for the sanitary condition of this town is in several other respects anything but satisfactory. The drainage is very defective. There is an absence of all natural drainage. The levels of the streets and lanes are very irregular, and the court-yards of houses are, as a rule, a foot or more below the level of the roads and lanes, precluding house-drain connection with the main drains. The night-soil and scavenging establishments are below the requirements of so large, so dirty, and so irregularly built a town as Dacca. It has not yet been provided with a sufficient number of public latrines, and, worse than all, many "Gors," well-privies, and contaminated wells yet exist. It is a significant fact that no cases of Cholera occurred among Europeans in this town since 1878 (particularly during the severe outbreak of 1882, when every native who could fled from the town), but that prior to 1878 one or two cases occurred among them annually. The facts associated with this immunity are that the new water-supply was introduced in May 1877, and that the Europeans are more careful as to the character of their drinking-water than the Natives. A case in point, illustrating the utter indifference evinced by Natives with regard to drinking-water, is that after an ineffectual attempt on the part of the Civil Surgeon to have a favourite well, containing 49 per cent. of previous sewage contamination, closed, its water was conveyed to a new tank close by. It is found hard to get the native members of the Municipality to believe that well-water in Dacca is only diluted sewage.

	Ratio per *mille.*		Ratio per *mille.*
Harirampur thanah ...	8·28	Manikganj thanah ...	3·55
Munshiganj " ...	8·27	Sabhar " ...	3·25
Naraingunj town ...	5·65	Rupganj " ...	3·02
Nowabganj thanah ...	4·59	Lalbagh " ...	2·93
Jafferganj " ...	3·97		

66. *Faridpur.*—Cholera prevailed very severely and fatally in Faridpur. It stands third on the list of cholera-stricken districts. The extent of country pervaded by the disease was much larger, and the mortality caused by it considerably greater as compared both with 1883 and the quinquennium 1879-83. The death-rate was 5·34 per 1,000 of population in 29·53 per cent. of the villages, as opposed to 1·27 per 1,000 in 12·30 per cent. during the preceding year, and 1·79 per 1,000 during 1879-83. The Cholera of January and February was a continuation of the outbreak of the past year. There was an aggravation in March, which culminated in severity in April involving the whole district. After this there was a gradual abatement till October, from which month the severity of the disease progressed in intensity, and spread to every thanah in the district, excepting Humdumpur, November being the worst month during this period. Every circle in the district exhibited high death-rates. They are named in the margin in the order of suffering. The town of Faridpur, which had hitherto been comparatively free from cholera, had a severe outbreak during the fourth quarter of the year. The following summary of facts connected with this outbreak, recorded by the Civil Surgeon, may be found interesting:—

	Ratio per *mille.*		Ratio per *mille.*
Palang thanah ...	8·70	Faridpur thanah ...	4·49
Madaripur " ...	8·56	Mukaudpur " ...	3·76
Awanpur " ...	6·45	Bhanga " ...	3·63
Faridpur town ...	6·13	Pangsa " ...	3·56
Bhushna thanah ...	5·66	Gopalganj " ...	3·36
Kotalipara " ...	5·50	Goalundo " ...	3·19
Shibchar " ...	4·57	Humdumpur " ...	2·55

"(*a*). Those cases which occurred in the town were in the persons of those who had nothing to do with any previous case of cholera. (*b*) On an average about eight persons attended on each of the cases including medical attendants, relatives, friends and servants, and none of them got an attack of the disease. (*c*) Nervousness or fear had not any marked influence in producing the disease. (*d*) Cholera cases occurred among people of all classes and living in different sections of the town and who use water from different sources, some from tanks, and others from the khals, &c. (*e*) The largest number of cases occurred in places that are low and damp, and hedged in by trees, and are ill-ventilated and dirty. (*f*) Several cases occurred in or about the houses where cases also occurred in 1882. (*g*) Although the disease prevailed so severely in the town, yet the villages situated within a mile or two from it remained almost free, though they had to get their supplies of provisions from the infected bazar. (*h*) The jail, situated in ward No. 3, having an average population of nearly 260 persons, remained altogether free from the disease, though cases occurred within a few hundred yards from the garden, and prisoners were admitted into the jail from infected thanahs of the district, and had to undergo mental troubles, physical labour, long journeys with insufficient food; and that many of them were in indifferent and bad health, and suffered from bowel-complaints. (*i*) Most of the cases were males, and only a few were boys. (*j*) The cases which took place in the beginning, and those which took place towards the end of the outbreak, differed in nature; the former were sudden, sharp and severe; the latter were milder and more prolonged; and in some of them all the symptoms were not present, and death took place 48 or 60 or more hours after." The disease also prevailed with great severity in the Madaripur town, and spread rapidly to the villages adjoining the Palang police station, and in Amgram in thanah Madaripur. The unusual virulence of the disease is referred to the drinking water in these localities, which is deficient and bad, the early cessation of the rains having caused the tanks to dry up prematurely, and in some places to leave the people nothing to drink, except the bhil water, in which jute had been steeped. The rivers were also below their normal level

67. *Backergunge.*—In this district also the disease was more widespread and fatal than in the preceding year. 34·50 per cent. of the villages, or 8·19 per cent. in excess, were attacked, and the mortality amounted to 4·63 per 1,000 of population, being 2·23 per 1,000 above the rate of 1883 and 2·53 per 1,000 above that of the lustrum 1879-83. The cold and hot months of January to May, and October to December were the worst, and the intervening rainy months the contrary. This fact has been frequently observed, the only reason assigned for it being "that in the absence of rain and during the falling of the sub-soil

water the general causes of cholera are more concentrated." The mortality was noticeably severe in all the circles, excepting Barhanadi,—*vide* marginal figures. The Civil Surgeon observes that it is noteworthy, as illustrating the fact that there is a close relation between the prevalence of cholera and insanitary conditions that the comparison between the prevalence of the disease in the Jhalokati and Perozepore town is very marked. The former, in which sanitation is lamentably deficient, suffered severely; while the latter, only 18 miles off, the sanitary condition of which is good, enjoyed great immunity from the disease. But this observation, he states, does not apply to rural areas, the sanitary conditions of which are well-nigh similar, or in other words more or less objectionable.

	Ratio per *mille*.		Ratio per *mille*.
Bhandaria thanah ...	8·39	Backergunge thanah ...	4·91
Medhiganj „ ...	6·84	Bhola „ ...	4·25
Gulsakhali „ ...	6·25	Jhalokati „ ...	4·16
Mutbari „ ...	6·11	Nalchiti „ ...	3·53
Gulachipa „ ...	5·91	Bauphal „ ...	3·33
Patuakhali „ ...	5·90	Barisal „ ...	3·17
Barisal town ...	5·61	Surupkati „ ...	2·93
Gaurnaddi thanah ...	5·37	Perozepur „ ...	2·58

68. *Mymensing.*—In this district the disease did not exhibit any marked advance either in extension or severity, and the mortality was on the whole low. The death-rate stood at 2·08 per 1,000 of population in 13·31 per cent. of the villages against 1·26 per 1,000 in 9 per cent. Nevertheless, the mortality in the circles named in the margin was noticeably great. The Civil Surgeon observes that, contrary to the experience of former years, there was comparatively less cholera present in the district during the first quarter of the year. During this period there fell only 6·64 (? 3·63) inches of rain. Coincident with the increase of rain (6·01 inches) in April there was a sudden rise in the severity of the disease throughout the district, which progressed in intensity up to June. During July to September, when the country was flooded, a marked decline occurred; but during the last quarter, with the subsidence of the floods, the incidence of the disease was very severe, particularly in November and December. It was during this period that the bulk of the high mortality in Pingna thanah occurred.

	Ratio per *mille*.
Pingna thanah ...	10·47
Kishorganj town ...	5·03
Jamalpur „ ...	4·66
Durgapur thanah ...	4·51
Bazidpur „ ...	3·07
Gopalpore „ ...	2·52

Cholera prevalence in the Chittagong Division.

69. The Cholera statistics of this Division are subjoined:—

	Districts.	Percentages of Villages attacked.		Mortality in 1884.		Difference in 1884 in Death-rates compared with—		Unhealthy Months.
		In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per *mille*.	1883.	1879-83.	
Eastern Districts. *Chittagong Division.*	Chittagong ...	15·03	10·46 *I*	1,264	1·09	·80 *I*	·17 *D*	May to July, November and December.
	Noakhalli ...	13·51	11·69 *I*	1,374	1·67	1·57 *I*	1·42 *I*	August and September, November and December.
	Tipperah ...	11·67	3·86 *I*	3,051	2·00	·40 *I*	·86 *I*	January to May and October to December.
	Total ...	12·56	6·62 *I*	5,689	1·63	·81 *I*	·66 *I*	April, May, August, September, November and December.

On the whole, the prevalence of Cholera in the Chittagong Division of Bengal was not excessive, although the disease extended over 6·62 per cent. of additional villages, and the mortality was higher by ·81 per 1,000 of population as compared with 1883, and ·66 per 1,000 with the quinquennium 1879-83. The most unhealthy months were April, May, August, September, November and December. This differs to some extent in comparison with the other Divisions in Bengal Proper, from causes which will be apparent presently.

70. *Chittagong.*—In this district cholera extended over a much larger area, represented by 10·46 per cent. of additional villages; but the mortality was not relatively as great, being only ·80 per 1,000 of population in excess. In

comparison with the lustrum 1879-83, a decrease in the death-rate of ·17 per 1,000 is seen. On the whole, however, the suffering was not very great, as only 1·09 per 1,000 of the population died of the disease, and conspicuously high mortality was returned by only the Chittagong town (5·01 per 1,000) and the rural circles of Chakariya (2·93 per 1,000), Banskhali (2·44 per 1,000) and Teknaf (1·86 per 1,000). A noticeable feature connected with the prevalence of the disease this year was that immediately after the occurrence of a violent storm, of a cyclonic character, early in November, it raged with great severity, commencing in the town of Chittagong and becoming general over the district, with added virulence during December. The Mirserai and Kumuria circles, however, escaped this visitation of the disease in its severe aspect. The former thanah also enjoyed immunity from it during 1880 to 1883. In this outbreak a very large quantity of rubbish from the homesteads in the town of Chittagong, which otherwise could not have been got at, was swept out, collected on the roadsides and burnt, sulphur being freely used in these fires. The people willingly assisted in carrying out this measure, going to the length of purchasing sulphur and burning it for themselves. Thus one source of insanitation which could not be removed, either with money or by the spontaneous action of the people, was got rid of from this notoriously unhealthy town.

71. *Noakhulli.*—The mortality from Cholera in this district (1·67 per 1,000 of population), although not excessively high, exceeded that of 1883 by 1·57 per 1,000, and that of the lustrum 1879-83 by 1·42 per 1,000. The circles named in the margin returned the highest death-rates. The disease manifested severity in July, and, prevailing with added vigour in August, attained maximum intensity in September. It subsided markedly in October, but became active again during November and December. A very severe outbreak of the disease occurred in the Sudharam town, which commenced in August and ended in October. It was not confined to any particular locality, but was scattered over different parts, cases occurring at irregular intervals and, according to the Magistrate, seldom attacking more than one homestead in the same locality, stopping for a few days, and re-appearing with re-doubled force. Another curious feature of the disease was that it was confined to the Hindus, as only two or three Mussulmans suffered. It appeared first in the house of Dr. Juggut Bundhu Gangooly, after his return from Begumgungo where he had been to treat a cholera patient, and the first victims were his three little daughters. Prior to the period when the disease raged, the rainfall was the smallest as compared with corresponding periods of several previous years; but on the occurrence, on the 1st of November, of a furious storm, accompanied by heavy rain (8·90 inches in 10 hours), the disease disappeared. This, it will be observed, is contrary to the experience in the Chittagong town, where the same storm is said to have caused a very severe outbreak of the disease. The Assistant Surgeon in charge, Anund Chundra Mukerjee, visited many of the affected localities, and found their sanitary condition very bad. The houses were damp and their surroundings filthy, and the neighbouring drains were offensive and contained in many places stagnant and foul water "lined with patches of scum in which myriads of minute organisms propagated, developed, and thrived luxuriantly." With reference to an outbreak which occurred in certain villages in Chhagulnaia thanah, the Assistant Surgeon remarks that, "importation of the disease was distinctly traceable in every village where the disease appeared. Men from several villages went to collect thatching grass from the hill sides belonging to the Maharajah, and there many of them contracted the disease and some died, and many of them who returned apparently well, were infected with the poison. The first house in the village where cholera broke out was invariably the house to which a sick or infected man had returned, or the body of a cholera patient was carried. Generally, the largest number of deaths from the disease occurred only in the families wherein the seed of the disease was introduced directly from the infected hills. * * * * The disease, when it first made its appearance, did not show a tendency to spread widely: in a village scarcely more than two houses contracted the malady

	Ratio per *mille.*
Ramganj thanah	5·06
Sudharam town	4·29
Begamganj thanah	3·24
Lakshampur „	2·85

from the one where it first showed itself. A house in each village formed a distinct centre where the disease was originally carried by importation. Haripur is a big village. The main road from the sub-division to Chhagulnaia divides it into two parts. The part of the village on the northern side of the road where there was no introduction of the seed of cholera by importation remained perfectly free from the disease, whereas that portion of it on the southern side where a person returned from the infected place suffered from the malady." The above localities are in a very insanitary condition. The water-supply is bad, several of the deep tanks being in a foul state from ingrowth of rotten vegetation. Putrid cow-dung is heaped up near dwelling-houses. The dead are buried on the banks of the drinking water tanks. The Noakhali jail, with its superior sanitary arrangements, enjoyed perfect immunity, although surrounded by the disease. In addition to the usual measures adopted to arrest the progress of the disease were the strict prohibition of throwing the dead bodies of cholera subjects into the khals, and the proper disposal of cholera vomit and excreta and the clothing and bedding of cholera patients.

72. *Tipperah.*—In this district 2 per 1,000 of the population died from Cholera in 11·67 per cent. of the villages, as opposed to 1·60 per 1,000 in 7·81 per cent. of the villages in 1883, indicating an increase in both the extension and fatality of the disease. The circles named in the margin experienced the highest suffering.

	Ratio per *mille.*
Brahmanberiah thanah ...	3·12
Chandpur " ...	2·93
Nabinagar " ...	2·83
Daudkandi " ...	2·75
Hajiganj " ...	1·95

The cholera of November 1883 continued to prevail until May of the year under review, when it began to subside gradually with the setting in of the rains ; but in September it became again active and increasing in vigour, culminated in severity in December. In some parts of the district, however, particularly in Daudkandi and Hajiganj, there was a sudden rise in mortality after a storm which swept over the district on the 1st of November. Here, it will be observed, the effect of the storm was the same as in Chittagong. Referring to the causation of the disease, Dr. ffrench-Mullen, the Civil Medical Officer, says :—"It was noticed that the fields dried up with unusual quickness after the rains this year. This no doubt tainted the atmosphere on account of the rapidity of the evaporation. The water holes in which the people are accustomed to steep jute dried up in many cases so that the tanks used for drinking purposes were used to steep their jute. It is popularly thought that the decomposition of the cast-off portions of the jute makes the surrounding atmosphere unhealthy, and this predisposes the inhabitants to cholera." It is, moreover, said that the villagers have recourse during the prevalence of cholera to religious ceremonies to avert the ravages of the disease, instead of attending to the sanitation of their villages. An outbreak of the disease which occurred in the town of Comillah, was observed to have been entirely confined to the thickly-populated native quarters and to its outskirts. A smart outbreak occurred in the town of Brahmanberiah. This town is in an extremely insanitary condition. The drainage is very defective, all the drains being kutcha and out of level, causing the accumulation in places of stagnant water. It is the general practice for the people to use the drains as latrines in which the night-soil lies and festers. Interments are carried on in the compounds of dwelling-houses. The Deputy Superintendent of Vaccination, Eastern Bengal Circle, who visited this town, supports the above description of its insanitary condition.

BEHAR.

73. In this Division of the Province 17,686 deaths were reported to have occurred from Cholera among its population, numbering 23,127,104, yielding a death-rate of ·76 per 1,000. This occurred in 4·83 per cent. of the villages. The corresponding figures of 1883, and the quinquennium 1879-83 are furnished in the margin. The comparison indicates a slight extension of the disease with a large reduction in mortality. The suffering in Behar is found to have been considerably less than

Cholera prevalence in the Behar Division of the Province.

	In 1883.	Average in 1879-83.
Number of deaths ...	27,568	38,483
Ratio of deaths per 1,000 of population ...	1·19	1·66
Percentage of villages attacked	4·71	8·78

in Bengal Proper and Orissa, and equal to that in Chota Nagpore. As usual May to August were the unhealthiest months.

Cholera prevalence in West Behar.

74. The figures illustrating the prevalence of Cholera in West Behar are presented in the subjoined table :—

Districts.	Percentages of Villages Attacked.		Mortality in 1884.		Difference in 1884 in Death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per mille.	1883.	1879-83.	
West Behar. Patna	11·53	2·38 *I*	3,553	2·02	·74 *I*	·39 *I*	April to September.
Gya	4·44	4·44 *D*	2,022	·95	2·78 *D*	1·46 *D*	July to September.
Shahabad	4·53	7·24 *D*	1,776	·90	2·34 *D*	4·13 *D*	May to August.
Mozufferpore	·91	6·67 *D*	317	·12	1·20 *D*	2·59 *D*	May.
Durbhanga	1·60	2·61 *D*	766	·28	·77 *D*	1·19 *D*	May, June and November.
Sarun	4·71	·73 *I*	1,338	·58	·10 *I*	·36 *D*	August and September.
Chumparun	·99	·01 *D*	649	·37	·07 *I*	1·80 *D*	August.
Total	3·99	2·62 *D*	10,410	·69	·93 *D*	1·17 *D*	July and August.

In the western portion of Behar there was, on the whole, much reduction in the extent of country pervaded by the disease, as well as in mortality. This decrement is represented, with regard to area attacked by 2·62 per cent. of the villages, and to mortality by ·93 per 1,000 of population in comparison with 1883, and 1·17 per 1,000 in comparison with the lustrum 1879-83. July and August exhibited the largest number of deaths.

75. *Patna.*—In this district Cholera prevailed more extensively and with greater fatality than in 1883, but was not excessively severe. The death-rate stood at 2·02 per 1,000 of population in 11·53 per cent. of the villages, the increment over 1883 being ·74 per mille and over the average of 1879-83, ·39 per mille. The circles indicated marginally returned the highest death-rates.

	Ratio per *mille.*		Ratio per *mille.*
Patna thanah ...	6·14	Silao thanah ...	3·53
Behar town ...	4·92	Massauri „ ...	2·76
Dinapore thanah ...	4·48	Maner „ ...	2·61

The seasonal activity of the disease commenced in April and steadily increasing month by month, culminated in severity in August. It was also active during September, but the remaining months were months of great immunity, January and February exhibiting no deaths. Of local outbreaks, a very severe one occurred in village Koormee Chuck in which 60 persons were attacked, of whom 30 died. This village is reported to be thickly populated and its water-supply " abominably bad." It was ascertained that at the time of the outbreak the people used to drink the water of a stagnant pool contaminated with all descriptions of organic matter. On abandoning this water and taking to the well in the village, " the virulence of the epidemic subsided, and the disease gradually disappeared in a very short time." Another outbreak, in epidemic form, prevailed in some villages in the Dinapore sub-division from the middle of April to the end of October. Referring to it, the Sub-divisional Officer writes :—" The most remarkable point in regard to the outbreak is that the disease broke out in places where cleanliness was very rigidly observed ; while, on the other hand, villages which were, as far as outward appearance went, in a filthy state, escaped the epidemic altogether." This outbreak also affected the Regiment in the Cantonment of Dinapore. The troops were sent to the Maner encamping ground and no fresh cases occurred among them during the three weeks they were encamped, but the disease broke out in a virulent form in the adjacent villages.

76. *Gya.*—In this district the high suffering of 1883 abated very considerably during the year under review. The mortality amounted to only ·95 per 1,000 of population against 3·73 per 1,000, and the percentage of villages attacked was 4·44 against 8·88, showing a decrease in death-rate of so much as 2·78 per 1,000 and an escape of half the number of villages which were overrun by the disease in 1883. July, August and September were the

most unhealthy months, particularly August. Only in the town of Gya (4·72 per 1,000) and in the rural circles of Nabinagar (2·53 per 1,000) and Attri (1·14 per 1,000) conspicuously high death-rates occurred. The Sub-divisional Officer of Aurungabad reported that cholera of a virulent type prevailed in villages Chundergurh, Nabinagar and Jhari. These localities have the reputation of being the most unhealthy in the sub-division; but importation of the disease from the adjacent district of Shahabad is also quoted as helping its spread. A rather serious outbreak occurred in the Rajauli town in August. The water-supply of this town is suspected to be bad. Fifty-eight deaths from cholera were stated to have occurred among the pilgrims who passed through this district.

77. *Shahabad.*—In this district also the severity of the disease had considerably abated. In fact there was less of it than during the preceding eight years, 1877 and 1880 excepted. The death-rate during the year under review amounted to ·90 per 1,000 of population in 4·53 per cent. of the villages, against 3·24 per 1,000 in 11·77 per cent. of the villages in 1883. Compared with the average death-rate of 1879-83, the large reduction of 4·13 per 1,000 is seen. There were no deaths during the first two months of the year, and in March only two casualties occurred, but from April the severity of the disease increased and progressed until September, when it commenced to decline very sensibly, December returning only four deaths. The town of Sasseram appears to have been remarkably free from the disease, with only one fatal result. It might be recorded here that the Sub-divisional Officer of Sasseram is of opinion that the entire absence of cholera during the year from this town is attributable to the improved quality of the water in Sher Shah's tank since it was provided with an inlet to receive canal water and an outlet to keep it flowing.

78. *Mozufferpore and Durbhunga.*—The extension and fatality of Cholera in these districts had declined more tangibly than in the other districts in West Behar, which enjoyed immunity from it. The death-rate in the former was only ·12 per 1,000 of population, and in the latter ·28 per 1,000 against 1·32 and 1·05 per 1,000, respectively, in the preceding year. In no areas in these districts was the mortality noticeably high. There is nothing further to record regarding cholera in Mozufferpore, and the only noteworthy points in connection with its prevalence in Durbhanga submitted by the local officers are the following. The Civil Surgeon says that the only peculiarity in its prevalence was that the last quarter of the year was marked by the rather unusual occurrences (for the time of the year) of simultaneous outbreaks in various parts of the district; but although spread over a pretty large area, the type of the disease was mild and not very fatal. The Sub-divisional Officer of Beniputti notes that in Beniputti thanah and in the adjacent villages cholera prevailed epidemically, but disappeared with the setting in of the winter. This is opposed to the Civil Surgeon's observations.

79. *Sarun.*—The mortality from Cholera in this district was somewhat greater than in 1883, the death-rate amounting to ·58 per 1,000 of the population in 4·74 per cent. of the villages, as opposed to ·48 per 1,000 in 4·01 per cent. of the villages; but these figures also indicate that the suffering was not great. Noticeably high mortality occurred in only the Sarun town, which returned a death-rate of 2·47 per 1,000 of population. No particulars have been furnished with regard to the prevalence of the disease in this town.

80. *Chumparun.*—This district also did not experience any severe suffering from the disease, the death-rate amounting to only ·37 per 1,000 of population, against ·30 per 1,000 in 1883, and the percentage of villages attacked being ·99 against 1·00. August was the worst month, in which the deaths rose to 416 from 24 during the preceding month. It was observed that the Hardi thanah, which is the most unhealthy, and lies in great part between the Bagaha and Bettiah thanahs where cholera was present, was not affected, and that similarly Govindgunj and Adapore, which, although surrounded with cholera-affected localities, viz., by Bettiah, Motihari, Kasariya and Dhaka, escaped.

81. In the following table are exhibited the statistics indicating the extent of prevalence and fatality of Cholera in East Behar :—

Cholera prevalence in East Behar.

Districts.		Percentages of Villages attacked.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
		In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per *mille.*	1883.	1879-83.	
East Behar.	Monghyr	8·01	5·50 *I*	1,381	·70	·26 *I*	·78 *D*	June to August.
	Bhagulpore	10·90	9·06 *I*	1,604	·81	·56 *I*	·61 *D*	May to August.
	Purneah	1·53	·55 *I*	417	·22	·04 *I*	1·26 *D*	April.
	Maldah	7·68	·41 *D*	1,158	1·62	·15 *I*	·26 *I*	April to June and December.
	Sonthal Pergunnahs	5·30	4·49 *I*	2,716	1·73	1·50 *I*	1·14 *I*	April to August.
	Total ...	6·21	4·06 *I*	7,276	·90	·51 *I*	·38 *D*	May to August.

These figures indicate that, on the whole, while the disease was not widespread in East Behar, it invaded 4·06 per cent. of the villages in excess of the percentage of 1883, associated with an increase of mortality to the extent of ·51 per 1,000 of population; that in comparison with the quinquennium, 1879-83, a reduction in death-rate is seen, amounting to ·38 per 1,000; and that the unhealthy months were May to August.

82. *Monghyr.*—In this district the disease did not prevail extensively or very fatally. There was, however, an increase, in comparison with 1883, in the proportion of villages traversed by the disease of 5·50 per cent. and of mortality to the extent of ·26 per 1,000 of population. June to August were, as usual, the unhealthiest months, and the circles named in the margin suffered the most. The local reports do not furnish any information accounting for the high death-rates in these circles.

	Ratio per *mille.*
Jamalpore town	5·01
Monghyr "	2·71
Chakai thanah	2·63

83. *Bhagulpore.*—In this district, although there was more Cholera, the mortality was very low, amounting to ·81 per 1,000 of population in 10·90 per cent. of the villages as opposed to ·25 per 1,000 in 1·84 per cent. of the villages. The months of preponderating suffering were May to August, but only the Bhagulpore town returned a noticeable high death-rate, viz. 4·68 per 1,000 of population. No explanation has been furnished regarding the prevalence of the disease in this town, but in Banka, where 1·85 per 1,000 of the population died, the unhealthiness is attributed to local insanitary conditions and to the people being compelled to live on inferior food, owing to the high prices for the ordinary food grains caused by failure of crops.

84. *Purneah.*—This district enjoyed great freedom from the disease, the death-rate amounting to only ·22 per 1,000 of population in 1·53 per cent. of the villages. Most of the cholera cases occurred in the south of the district, and while in no circle the mortality was heavy, in the Purneah, Gondwara, Matiari and Raniganj thanahs no deaths occurred.

85. *Maldah.*—In this district, while the disease prevailed less extensively, the mortality was slightly higher as compared with the preceding year. The mortuary figures represent a death-rate of 1·62 per 1,000 of population against 1·47 per 1,000, and percentages of villages attacked 7·68 against 8·09 in 1883. The seasonal severity of the disease in Maldah was different from the rest of the districts in Behar and corresponded more with that of those in Lower Bengal, inasmuch as April to June and December were the unhealthiest months. The highest death-rates were returned by the circles named in the margin. The Magistrate refers the severity of the disease to insufficient inundation, insanitary habits of the people, and want of good drinking water in many places during

	Ratio per *mille.*
English Bazar town ...	6·11
Ratua thanah ...	2·77
Nawabganj " ...	2·73
English Bazar " ...	2·02

the hot weather. To these causes the Civil Surgeon adds sleeping on damp floors and fouling of the river banks with human excreta, and further on in his report, he says:—"The healthy are crowded with the sick. The evacuations are thrown recklessly out of doors, with no pretence of disinfection, and thereby become hot-beds for the manufacture of new cases. The clothing worn by the patients and soiled with their emanations is allowed to remain, and the people refuse to destroy it, and the bodies of people dying of cholera are thrown, without proper burning, into the river, the chief supply of drinking water. In some cases I have seen cholera stools kept in a vessel in the hut where the patient and several other members of the family were herded together, eating, drinking, sleeping all together, and all the while inhaling air poisoned with putrifying cholera stools." He suggests that the people should be compelled by law to observe sanitary precautions, as otherwise cholera must continue to be present permanently in their midst.

86. *Sonthal Pergunnahs.*—Cholera prevailed in this district much more extensively and with considerably enhanced severity as compared with the preceding year. 5·30 per cent. of the villages were overrun by the disease against ·81 per cent., and the death-rate stood at 1·73 per 1,000 of population against ·23 per 1,000 in 1883. April to July were the months of greatest prevalence, particularly May, and the circles named in the margin suffered the most. The relation indicated below between the increase and decrease of cholera on the one hand, and the increase and decrease of temperature, rainfall, and depth of sub-soil water level on the other hand is remarkable for Behar, and is more in accord with the behaviour of the disease in Lower Bengal. The disease while present in some part of the district or other throughout the year, commenced to prevail with some severity from March and attained maximum intensity in May. It exhibited somewhat mitigated severity during the following two months, and then rapidly declined until the end of the year. During January and February, when the temperature was low and there were slight showers of rain, the district was comparatively free from cholera, during March, when the temperature advanced by several degrees and there was absolutely no rain, the disease gained fresh strength and commenced spreading. During April, when the heat was still greater and very little rain fell, the disease become more wide-spread and prevailed with added virulence in the localities before attacked. In May, when the highest temperature was recorded and the little rain which fell amounted to only 1·02 inches and was distributed over 8 days, the disease attained maximum intensity in all the places where it was prevailing, and attacked new areas. From June, when the temperature fell and rainfall increased and the sub-soil water began to rise, the disease gradually declined in severity, and disappeared from locality after locality until December, when it prevailed with subdued intensity in only the town of Sahebgunge and in a few places in the subdivisions of Dumka and Godda. Most of the local outbreaks of the disease were severe, and the worst of them are cited below. In an outbreak which occurred in the bazar in the town of Dumka, 52 were attacked, of whom 38 died. This outbreak spread to the neighbouring villages, and thence to other villages in the subdivision of Dumka, attacking in all 81 villages, and causing 230 deaths. It was of a very virulent type with little or no vomiting and proved fatal within 24 hours. In the lowlying tracts in the subdivision of Rajmehal the disease prevailed very generally, affecting 110 villages, and exhibiting 370 fatal results. A severe and exceptionally fatal outbreak occurred in the Pakour subdivision. It first appeared in villages Mohespur and Aludanga, and from these villages it spread rapidly to 131 other villages, and in the five months during which it lasted caused 651 deaths. The disease prevailed with great severity in the subdivision of Deoghur, including Jamtara. It appeared in village Rohini in thanna Deoghur, soon affected the neighbouring villages, and continued to spread to other villages with unabated vigour during five months, and attacked in all 866 persons and killed 706 in 363 villages. It behaved similarly in thannah Madhupore, where 130 persons fell victims to it in 39 villages. In 35 villages in Jamtara 118 persons died. In the Godda subdivision 451 persons were attacked in 80 villages, of whom 355 died.

	Ratio per *mille.*
Deoghur town	5·74
Pakour thanah ...	3·21
Deoghur thanah, including Jamtara	2·44

Cholera prevalence in Orissa.

87. *Orissa.*—In the subjoined table are presented the Cholera statistics of the Orissa Division of the province:—

Districts.	Percentages of Villages Attacked.		Mortality in 1884.		Difference in 1884 in Death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Number of Deaths.	Ratio per mille.	1883.	1879-83.	
Cuttack	22·75	15·13 *I*	7,482	4·16	2·21 *I*	1·63 *I*	April to December.
Poori	13 70	7 63 *I*	3,128	3·52	2·26 *I*	1·00 *I*	June to December.
Balasore	24·05	12·10 *I*	7,373	7·79	5·67 *I*	3·56 *I*	January to July, November and December.
Total ...	20·86	12 60 *I*	17,983	4·95	3·13 *I*	1·98 *I*	April to July and November.

The prevalence and fatality of Cholera in Orissa were, it appears from the above figures, excessively severe, considerably more severe than in the other three divisions of the Province. Every circle in the three districts which compose it exhibited high mortality. On the whole, 17,983 persons out of a population of 3,628,832, or at the rate of 4·95 per 1,000, fell victims to the disease in 20·86 per cent. of the villages, against 6,631 persons, or at 1·82 per 1,000 in 8·26 per cent. of the villages during the preceding year, and 10,797 persons, or at 2·97 per 1,000 in 14·69 per cent. of the villages during the quinquennium 1879-83.

Diagram illustrating the seasonal prevalence of Cholera in Orissa and Bengal.

88. The annexed diagram illustrates the seasonal prevalence of Cholera in the Orissa Division of the Province during the five years 1880 to 1884 as contrasted with its seasonal incidence in Lower Bengal.

Results deduced from the Diagram.

89. The following results are presented by this Diagram.

1880. *Orissa.*—The mortality was very low in January, increased considerably in February, still more so in March, declined through April to June, steadily rose from July to the end of the year, being comparatively severe in November and attaining maximum intensity in December. *Bengal.*—The severity of the disease was greatest in January, after which there was a decline which lasted up to October, February to May being months of comparatively much suffering and June to October of great freedom. In November there was a sudden rise of mortality, which made December as unhealthy as March.

1881. *Orissa.*—The first month of this year ushered in much mortality from cholera, which, however, diminished in February to increase considerably in March, and to attain maximum intensity in April. The cholera of May and June was less fatal; but July exhibited great mortality, which, however, declined through August to December with varying incidence. *Bengal.*—There was much cholera in January. In February there was a reduction followed by considerable increase in March and April, the latter month being the unhealthiest. May exhibited a larger number of casualties than March, but in June the severity of the disease diminished greatly, and this abatement continued with fluctuations until September, but gave place to high mortality in October to December, particularly during the last-named month.

1882. *Orissa.*—January and February were months of low mortality. From March it increased considerably and progressively up to May, which exhibited maximum severity. June and July were also months of great suffering, but August to November experienced subdued severity, which yielded to high mortality in December. *Bengal.*—Here cholera prevailed with much severity during the first five months of the year. From June to September there was a progessive reduction of fatal results, but in October there occurred considerable increase of mortality, which lasted through November to December, the last-named month being the unhealthiest.

1883. *Orissa.*—January was the most sickly month. February was less unhealthy and was followed by progressive subsidence of mortality up to June with slight exacerbation in March; but in July the death-rate rose suddenly. During August to December there was again a progressive decline of mortality, December being the healthiest month. *Bengal.*—January took the lead in the production of fatal results. February was considerably healthier, but in March the disease resumed activity, and in April it was almost as fatal as in January. In May the suffering was slightly less than in April. From June, however, the incidence of the disease subsided very considerably month by month up to September. In October there was a rise in mortality which continued through November to December, which was nearly as unhealthy as January.

1884. *Orissa.*—January, February and March were comparatively healthy months. In April there was a considerable rise of mortality, which continuing through May culminated in severity in June. The casualties in July were slightly smaller than in June, but fell considerably in August to increase again from September to the end of the year with varying incidence. *Bengal.*—The mortality was not very great in January and February, but in March there was a considerable increase, which rose in April to an unprecedentedly high proportion. In May there was a very marked reduction of fatal results, which abatement was still progressively greater up to September; but in October the disease resumed activity, and was very severe in November and December.

90. The table in the margin exhibits the mean mortality from Cholera in Orissa and in Bengal during the quinquennium 1880 to 1884, of which the details have been furnished above. It will be seen from it that, on the whole, the months of predominating mortality are April to July in Orissa, and March to May and December in Lower Bengal. How far the presence of pilgrims affects the seasonal prevalence of Cholera in Orissa will be shown when dealing with the history of the disease in Poori, to which district the main body of the pilgrims converge.

Summary of the above results.

ORISSA.	Ratio per *mille.*	BENGAL.	Ratio per *mille.*
May	·44	April	·37
April	·42	December	·28
July	·39	May	·23
June	·37	March	·19
March	·29	January	·17
December	·26	November	·17
November	·24	February	·10
August	·18	June	·07
January	·17	October	·07
October	·17	July	·04
February	·16	August	·03
September	·16	September	·02
TOTAL	3·29	TOTAL	1·76

91. *Cuttack.*—This district did not enjoy in the year under review the immunity from Cholera which characterised its incidence during the preceding year. On the contrary, the disease spread over a considerably larger tract of the district, and the mortality was very much higher, as the following figures show. The proportion of villages attacked was 22·75 per cent. against only 7·32 per cent., and the mortality stood at 4·16 per 1,000 of population against only 1·95 per 1,000. Moreover, the casualty rate of this year exceeded also that of the lustrum 1879-83 by 1·63 per 1,000 of population, and was also greater than during any individual year of this quinquennium. Of the 13 circles in the district, in not one was the mortality so low as to indicate that the incidence of the disease was not severe in it, as will be seen from the figures in the margin. January and February were months of low suffering. In March the disease became active and gradually increased in severity up to July. In August there was some abatement followed by increased severity month by month till it attained maximum intensity in November; but December was also an unhealthy month. It will be noticed that the disease clung to the district persistently throughout the year. This is, it is said, contrary to the experience of former years, when it appeared at certain times in

	Ratio per *mille.*		Ratio per *mille.*
Jaggatsingpur thanah	6·82	Jajpur thanah	3·43
Patamundi "	6·50	Salipur "	3·24
Aul "	6·19	Dharmsala "	3·24
Banki "	4·85	Tirtol "	3·11
Kendrapara "	4·25	Cuttack "	2·85
Cuttack town	3·74	Kendrapara town	2·80
Jajpur "	3·73		

epidemic form, and was often entirely absent. Excepting Jaggatsingpur, where the disease was most prevalent, it affected chiefly places through which the bulk of the pilgrims pass, such as Patamundi, Aul, Kendrapara, Jajpur, Salepur, and Dharmsala. The Superintendent of Vaccination of the Orissa Circle, who visited the Jaggatsingpur thanah, while the disease was present in it in November, attributes its prevalence chiefly to the eating of semi-cooked food at irregular hours, to the insanitary condition of the dwellings, filth of all descriptions in a putrid state lying in front of every door, and to bad water-supply, drinking water being taken from tanks rendered impure from promiscuous use and from wells unprotected from pollution. Pilgrims are not permitted to enter Cuttack town, but are made to pass by a road beyond its limits, recrossing the Mahanuddi river by a ferry below the anicut. Nevertheless, the mortality in this town was not inconsiderable. There are charitable dispensaries along the pilgrim route at Cuttack, Jajpur, Kendrapara and Dharmasala as well as lodging-houses to afford shelter.

Considering that this town is subject to an annually recurring high mortality from cholera and that the water-supply from the surface wells is bad, the necessity for good water is strongly indicated as an essential for the maintenance of health calling for early attention. As the river has already been dammed and converted into a great lake, a complete water-supply scheme for the town appears to be a matter of easy solution at a moderate cost. A scheme for the supply of filtered water to the town from the river was under consideration and a survey proposed, but no further action appears to have been taken in the matter.

92. *Poori.*—In this district also the disease prevailed with considerable severity, but at a more subdued rate than at Cuttack and Balasore. Nevertheless, the suffering was greater than during the past 5 years, excepting 1882. The mortality amounted to 3·52 per 1,000 of population in 13·70 per cent. of the villages, against 1·26 per 1,000 in 6·07 per cent during the preceding year, and 2·52 per 1,000 during the quinquennium 1879-83. Every circle in the district exhibited conspicuously high death-rates, as will be shown presently. Up to May the prevalence of the disease was not great in the district, but a sudden rise took place in June, and in July the disease attained maximum height. In August there was some abatement, which was followed by a progressive increase up to December, November being the next most unhealthy month to July and December to November. In the town of Poori, however, the maximum was reached in June. But this great rise in mortality, in fact the great fatality of the disease in this town, represented by a death-rate for the year of 13·51 per 1,000 of population, the highest of any of the circles, must not be taken as absolutely belonging to it, for it is calculated on the census population, which does not include the large floating population of pilgrims numbering from 30,000 to 60,000 who assemble here at times of festivals, some of which last about a fortnight. Such an influx of exhausted travellers, many of them from distant parts of India, and infirm, sickly, and well advanced in years, must necessarily be followed by a heavy death-rate not only from cholera but also from other diseases. In December this town was free from cholera, and this immunity Mr. Lyons, the Civil Medical officer, says is explained by the dispersion in the previous month of the pilgrims who had congregated in the town for the Panchuk festival. The rural circles exhibited considerably lower death-rates than that of the town, *viz.* Poori 4·84 per 1,000 of population, Pipli 4·01 per 1,000, Gope 2·26 per 1,000, Bhanpur 2·09 per 1,000, and Khurda 2·04 per 1,000. Poori, Pipli, and Khurda form the centres of the pilgrim streams, and Gope and Bhanpur are on the pilgrimage line. Mr. Lyons points out that the periods of fatality in these circles more or less correspond in time when the last two of the three great festivals are held, *viz.* the Ruth jattra commencing on the 25th June and ending on the 10th July and the Panchuk jattra commencing on the 30th October and lasting to the 3rd November. His views on the connection of cholera with the festivals are expressed in the following words: "There is a sameness so recurring that, whatever the theories may be of its causation, whether induced by the impurity of drinking-water, solar or atmospheric conditions, &c., there is little room for

doubt as to its communicability and dissemination by human agency, also that it impresses most where persons congregate most, and this the large halting grounds in this district bring out pretty clearly, cholera making its march on, and retreat from these with great distinctness; Khorda, Pipli (Satyabadi), and Poori town, as the centres on which the pilgrim streams converge, suffering the most." He submits the following account of the outbreak of the disease in the Poori town in support of the above views. The first case of cholera in the town occurred on the 21st June, when a large number of pilgrims had come into it for the celebration of the Ruth jatra. It assumed epidemic form at once and continued till the dispersion of the pilgrims, proving very fatal particularly in July and in a lesser degree in August. The entire line of the pilgrim route from Bhadrak to Poori was similarly affected, and the belief that the infection was carried into the town receives confirmation from the circumstance that 49 or 50 of the 52 cases of cholera admitted to the Poori hospital between the 21st and 23rd June occurred among the pilgrims above referred to. The remaining two or three were persons who were picked up on the road and brought to the hospital and might have also been pilgrims. The disease was also very fatally present in the district, and while it appears conclusive that it was imported into Poori by the Bhadrak pilgrims, it is also highly probable that they were indirectly the means of disseminating the disease in the district, as the centres which suffered most—thanahs Poori, Pipli, Khurda, Gope, and Bhanpur—all lay directly along the main lines of communication. Another significant fact is that the disease commenced to abate as soon after the pilgrims left the district, as from 776 deaths reported in July the number fell to 181 for the whole district in August. The Magistrate also points out that there is great cholera mortality at the shrine at Satyabadi, both among pilgrims and residents and recommends the establishment of a pilgrim hospital there. It has since been decided by the Poori Lodging-house Committee to construct this pilgrim hospital, and to apply to Government to extend the provisions of the Poori Lodging-house Act to it, so that the cost of the hospital may be met from the Lodging-house fund. Application is also to be made to extend the Act to Pipli and Bhabaneswar.

Question relating to effect of Pilgrimage on Cholera prevalence in Orissa examined.

93. In considering the effect of pilgrimage on Cholera prevalence in Orissa, we have first to see where and during what periods the festivals which attract pilgrims in large numbers are held. The information is furnished in the subjoined table, which, however, does not include the minor festivals, which are attended by the residents of the districts in small numbers. Five such festivals are held in Poori during March, August and November, where about 5,000 to 8,000 people assemble; five in Balasore, two in the town in May and February, and three in the sub-division of Bhadrak between the 11th and 14th of March, which are attended by 2,000 to 4,000 persons; and the Baroni mela is held in the large towns in Cuttack, particularly in Jajpur, for three days in June. The people who attend this festival come from miles around the places where it is celebrated, the assembly at Jajpur, numbering about 10,000:—

Names of Festivals.	Where held: District	Where held: Locality	Duration		Estimated Gathering.
Makar Sankranti	Poori	Khurdah thanna	12th January to 7th February	27 days	60,000
Pitheran Jatra	Do	Pipli ,,	16th ,, to 18th January	3 ,,	25,000
Chandrabhaga Jatra	Do	Gope ,,	on 3rd February	1 ,,	50,000
Shivaratri Jatra	Do.	Poori town	25th and 26th February	2 ,,	60,000
Jhulon or Dole Jatra	Do	Ditto	11th and 12th March	2 ,,	30,000
Panch Dole or Jhulon Jatra	Do.	Pipli thanna	14th to 16th March	3 ,,	20,000
Ashoke Astomi	Do.	Khurda ,,	3rd to 8th April	6 ,,	40,000
Jham Jatra	Do	Gope ,,	11th to 16th ,,	6 ,,	15,000
Chandan Jatra	Do.	Poori town	28th April to 18th May	21 ,,	20,000
Ruth Jatra	Do	Ditto	25th June to 10th July	16 ,,	50,000
Panchak Jatra	Do	Ditto	30th October to 3rd November	5 ,,	30,000

This table shows that, making allowance for the time taken up in arriving and departing, a very large number of pilgrims were present and passed to and from the districts of Cuttack, Poori and Balasore from the beginning of January to about the end of July, particularly during June and July on account of the car festival; that they were again present during October and November; and that the districts were free from them during August, September and December.

The subjoined table shows the mortality from Cholera during each month of the years 1880 to 1884 in all the circles in the three districts in Orissa.

Circles.	1880.												1881.											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Cuttack.																								
attack ... Town	...	·04	·01	..	...	·06	·20	[illegible]	..	...	·03	·19	·03	...	·09	·06	·01	...	·96	·45	·01	...	·03	·01
endrapara ,,	...	...	1·12	·46	...	...	·09	...	...	...	...	...	...	...	...	·09	·09	...	2·71	·65	1·40	·84	...	·93
ajpur ... ,,	·27	·18	·55	...	...	·83	·55	3·44	2·69	...	·09	...	·37	·09	·46	·27	·09	·09	1·07	...	·09	·65	...	·56
attack ... Rural	...	·03	·05	·01	·01	·06	·17	·07	...	·04	·02	·35	·35	·08	·18	·22	·07	·10	·36	·23	·04	·09	·36	·01
anki ... ,,	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
alipur ... ,,	...	·16	·34	·11	·009	...	·04	·62	·37	·08	·06	·14	·01	·10	·21	·23	·04	·05	·37	·18	·01	·004	·07	·03
aggatsing-pur. ,,	...	·07	·45	·13	·07	...	·06	·15	·14	·13	·88	·70	·17	·35	·43	·24	·07	...	·28	·40	·30	·23	·16	·005
rtol ... ,,	...	...	·23	·10	·09	..	..	...	...	...	·03	·06	·77	·43	·32	·07	...	·006	·23	·35	·05	·08	·04	...
ondrapara ,,	...	·02	·25	·04	·02	·02	·06	·07	...	...	·03	...	·006	...	·05	·04	·11	...	·24	·51	·06	·02	·14	·20
atamundi ,,	...	...	·13	·56	1·00	·59	·09	·04	·03	...	·29	1·40	·03	·14	·69	·65	·02	·73	·33	·13	·28	·79	·92	·63
al ... ,,	·01	·11	·12	..	·05	·22	·03	·06	·03	·08	·86	1·94	1·02	·36	1·93	2·49	1·73	1·23	·24	·05	·05	·09	1·40	·42
jpur ... ,,	·02	·16	·25	·01	·005	...	·12	·20	·06	·22	·45	·54	·87	·21	·28	·71	·26	·005	·12	·07	·06	·13	·49	·50
harmsala ,,	·02	·19	·30	·18	·02	·008	·08	·05	·07	·04	·15	·07	·05	·04	·28	·50	·20	·09	·47	·30	·18	·45	·30	·10
District Total	·01	·09	·26	·11	·09	·06	·08	·18	·11	·06	·28	·46	·36	·17	·40	·49	·28	·16	·35	·27	·12	·19	·33	·18
Poori.																								
oori ... Town	·08	3·12	1·01	·22	·65	·04	1·89	·08	...	·04	1·36	1·10	·48	1·23	3·52	5·15	·22	1·27	3·56	·08	·04	·30	·35	·04
Do. ... Rural	·006	·50	·65	·25	·01	·01	·26	·02	...	·03	·13	·72	·55	·50	·34	·33	·48	·01	·64	·27	·04	·33	·09	·16
pli ... ,,	...	·01	·52	·41	·08	·01	·04	·22	1·05	1·55	1·38	1·22	·33	·12	·12	·41	·03	·004	·46	·35	·27	·27	·14	·19
op ... ,,	...	·28	·57	·21	·04	...	...	·03	·05	·13	·45	·89	·39	·06	·13	·96	·36	...	·42	·08	·04	·03	·03	·36
hurda ... ,,	·02	·05	·14	·01	·009	·02	·13	·03	·004	...	·008	·07	·08	·03	·22	·26	·05	·008	·29	·15	·10	...	·01	·04
hanpur ... ,,	...	...	...	...	...	...	..	...	·04	...	...	...	·04	...	·37	...	·23	...	...	·02	...	...	...	...
District Total	·01	·25	·42	·20	·03	·01	·17	·08	·29	·43	·49	·65	·30	·19	·31	·53	·19	·04	·51	·21	·12	·15	·07	·13
Balasore.																								
alasore ... Town	·11	1·13	·64	...	...	...	·22	...	...	...	·05	·45	·11	·17	·51	·39	·05	...	3·80	...	·11	...	·23	2·58
Ditto ... Rural	·05	·28	·27	·09	·46	·02	·04	·01	·01	...	...	·04	...	·02	·06	·38	·08	·01	·19	·01	...	·02	·02	1·29
ro ... ,,	·01	·16	·80	·44	·21	·03	·07	·03	...	·006	·01	·86	·26	·23	·17	·27	·06	·05	·83	·25	·06	·10	·10	·31
alasore ... ,,	·02	·13	·10	·02	·02	...	·04	·10	·04	·02	...	·30	·61	·15	·37	1·13	·17	·04	1·07	·45	·13	·02	·02	·06
iapal ... ,,	...	·07	·15	·02	·01	·01	·02	·15	...	...	·07	·53	·96	·17	·01	1·08	·11	·01	·50	·15	·01	·05	·01	·67
sta ... ,,	·09	·24	·14	·11	·08	·04	·16	·01	...	·01	...	·36	·46	·01	·29	·53	·13	...	2·38	·28	·18	·04	·28	·79
adrack ... ,,	·12	·40	1·73	1·08	·27	·29	·27	·08	·15	·05	·10	·14	·51	·39	·62	·84	·72	·09	·39	·30	·03	·14	·35	·38
udebpore ,,	·63	1·09	·44	1·40	·53	·09	·01	·01	...	...	...	...	·07	·15	·11	·59	·03	...	·23	·26	·03	·01	·33	·09
amnagar ,,	·26	·91	·64	·41	·15	·04	·08	·08	·09	·16	·23	1·09	·59	·42	1·21	1·62	·36	·68	·42	·05	·12	1·05	1·36	·87
andbali ... ,,	·63	·11	·05	...	...	·05	·43	...	...	·02	·14	·61	·14	·11	5·03	3·10	2·22	1·93	1·07	...	·05	·03	·02	...
District Total	·15	·41	·69	·47	·20	·08	·12	·06	·04	·04	·07	·34	·41	·23	·63	·85	·34	·22	·77	·20	·07	·28	·38	·57

Ratio per 1,000

OF POPULATION.

1882. January.	February.	March.	April.	May	June.	July.	August.	September.	October.	November.	December.
·03	...	·06	·57	·60	·52	1·50	·43	·02	·25	·27	·10
·38	·31	·31	1·33	4·52	1·14	·06	...	...	...	·31	·38
·35	...	1·15	·26	...	2·13	·35	·53	·08	...	·26	·26
·006	·06	·07	·37	·40	·74	·88	·32	·12	·11	·26	·53
...	...	...	...	...	...	...	...	...	...	...	...
·09	·06	·05	·49	·35	·17	·28	·37	·22	·18	·06	·44
·004	·02	·02	·76	·34	·20	·53	·66	·53	·25	·30	·13
...	...	·05	·23	·64	·79	·58	·44	·41	·05	·04	·06
·23	·18	·23	·65	3·75	·06	·41	·12	·17	·43	·24	·10
·28	·71	·88	1·38	1·8	·16	·15	·009	·07	·07	·09	·40
·10	·18	·47	1·65	1·23	·19	·09	·05	·01	·02	·17	·57
·07	·09	·08	·21	·19	·13	·59	·06	·09	·02	·02	·12
·06	·10	·94	1·77	·78	·69	·11	·17	·18	·10	·02	·59
·08	·11	·27	·75	·92	·43	·43	·26	·20	·14	·12	·30
·16	·16	2·14	1·52	·2	7·12	·15	...	...	·04	·49	·94
·14	·08	·49	·76	·93	·81	·42	·11	·01	...	·03	·40
·07	·07	·19	1·17	1·15	·51	·62	·25	·07	·11	·01	·23
·01	·12	·30	·80	·98	·92	·18	·02	·01	·008	...	...
·04	·09	·14	·68	1·18	·00	·27	·27	·03	·003	·01	·13
...	·01	·03	·3	1·37	·64	·85	·27	·57	·18	·38	·18
·07	·08	·30	·84	1·08	·85	·42	·19	·06	·04	·05	·22
·39	...	·78	1·28	·24	·78	·18	·09	·09	·04	·40	·29
·77	·45	1·48	3·27	·81	·35	·36	...	..	...	·03	·09
·17	·18	·04	1·22	1·99	1·08	·81	·18	·005	·01	·01	·02
·25	·45	·23	·14	·36	1·14	·70	·23	·12	...	·10	·29
·99	·61	·09	·23	·09	·94	1·29	·30	...	...	·37	2·00
·11	·35	2·30	·61	·12	1·65	1·41	·19	...	...	·28	·98
·46	·08	·81	1·72	1·79	·88	·44	·14	01	·005	·05	·40
·05	·09	·19	·75	·60	·70	·32	·14	...	·01	·01	·02
·26	·10	·45	1·62	1·11	·50	·29	·05	·02	·007	·03	·16
·11	·36	·50	·73	4·85	·61	·07	...	·01	...	...	·19
·36	·24	·79	1·29	1·32	·88	·62	·14	·01	·006	·00	·40

1883. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
·04	...	...	...	...	...	·60	·32	·41	...	...	·02
·38	·06	·06	·06	...	·06	·06	·06	·25	·31	·06	...
·17	·80	·71	·34	·17	·35	·71	·08	..	...	·08	...
·12	·10	·01	...	·01	...	·45	·46	·08	·18	·03	...
·31	·03	...	...	...	...	·03	...	·01	...	...	·01
·26	·14	·05	·008	·008	·01	·22	·46	·36	23	·11	·008
·03	·08	·06	...	·02	·03	·02	·06	·14	02	·009	...
·01	·19	·50	·21	·29	·04	·03	·15	·26	·20	·33	·08
·11	·27	·45	·14	·03	·05	·06	·28	·94	·69	·29	·18
1 13	·90	·40	·47	·31	·24	·13	·18	·10	·22	·16	·23
·30	·12	·48	1·45	·84	1·47	·38	·13	·08	·35	·26	·10
·30	·07	·12	...	·16	·05	·06	·06	·06	·06	·10	·12
·15	·11	·02	·01	·01	·004	·10	·12	·01	·004	·05	·004
·22	·17	·18	·14	·12	·11	·15	·21	·22	·18	·12	·06
·78	·86	·61	·16	·08	·04	3·80	·24	·08	·04	·12	·04
·31	·23	·12	·03	·005	·01	·30	·07	02	·005	·005	·07
·08	·12	·16	...	...	·004	·39	·24	·01	...	...	·004
·008	·14	·24	...	·01	·13	·06	·24	·25	·06	·07	·07
·25	·13	·06	·02	...	...	·23	·11	...	·005	...	·003
·44	·09	·33	07	·03	...	·07	...	...	...	·03	...
·22	·21	·15	·02	·007	·02	·35	·15	·04	·01	·01	·03
·03	·14	·14	·59	·34	·34	·29	·09	.	·04	·04	·49
·13	·02	·10	·69	·25	·84	·04	...	·06	·09	·04	·03
·10	·14	·35	·24	·17	·09	·11	·01	·005	...	·005	·02
·65	·29	·10	·39	·47	·32	·23	·10	·27	·05	·10	·21
1·08	·28	·13	·39	·31	·81	·48	·02	·01	...	·14	·40
·75	·74	·78	·53	·71	·27	·19	·04	...	...	·04	·09
·30	·11	·12	·07	·28	·18	·12	·04	·04	·005	·08	·08
·02	·08	·25	·22	·12	·32	·02	·02	·01	..	...	·01
·20	·50	·22	·43	·65	·09	·20	·19	·01	...	·08	·05
·21	·01	·50	·53	·01	·15	·01	·03	·03	·01	·01	·11
·32	·19	·26	·34	·33	·22	·16	·05	·08	·01	·05	·10

1884. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.
·02	·02	·03	·10	·06	·13	·57	·62	·89	·69	[illegible]
·12	...	·63	·57	·12	·31	·63	·25	...	...	·12
...	·08	...	·08	·17	·80	1·06	·68	·08	·17	[illegible]
...	·066	·01	·08	·02	·27	·40	·30	·58	·40	[illegible]
...	...	...	...	...	...	·03	·60	2·21	1·21	[illegible]
...	·01	·16	·40	·17	·22	·40	·28	·38	·58	[illegible]
·009	·09	...	·09	·004	·07	·28	·80	1·44	1·85	[illegible]
·28	·01	·17	·13	·05	·07	·23	·05	·45	·57	[illegible]
·14	·15	·22	·26	·76	·74	·71	·34	·17	·37	[illegible]
·61	·20	·15	·52	·67	1·70	1·67	·17	·01	·02	[illegible]
·08	·02	·10	·37	·87	1·46	1·09	·06	...	·07	[illegible]
·05	·004	·004	·03	·08	·13	·05	·35	·14	·38	[illegible]
·01	·02	·03	·02	·25	·42	·44	·24	·21	·23	[illegible]
·09	·04	·09	·18	·24	·41	·55	·33	·48	·58	[illegible]
·04	·08	·48	·60	·04	5·32	2·25	·30	·16	·60	[illegible]
·005	·01	·05	·13	·03	·17	1·30	·16	·23	·26	[illegible]
...	·16	·06	·06	·02	·25	·76	·16	·52	·64	[illegible]
...	...	...	·06	...	·03	·38	·11	·43	·55	[illegible]
·003	·02	·005	·06	·06	·18	·72	·20	·17	·20	[illegible]
...	...	...	·01	...	·01	·02	·64	·22	...	[illegible]
·003	·05	·04	·09	·03	·31	·87	·20	·31	·34	[illegible]
4·49	1·87	·14	2·86	1·77	1·08	·39	...	...	...	[illegible]
·78	1·69	·00	1·80	2·40	·93	·06	...	...	·01	[illegible]
·06	·21	·03	1 05	3 90	6·85	2·98	·005	·01	...	[illegible]
·56	·12	·12	·01	..	·65	·74	·05	·03	...	[illegible]
·61	·95	·27	·07	·11	·45	·00	·01	...	·02	[illegible]
·18	·82	·20	·99	·54	1·01	·59	·01	...	...	[illegible]
·01	·005	·28	·34	·62	·67	·49	·08	·06	·01	[illegible]
·02	·01	·04	1·89	6·25	5·43	1·80	·01	...	...	[illegible]
·02	...	·09	·08	·11	·30	·19	·12	·007	·16	[illegible]
·01	·15	1·55	3 10	6·12	2·90	·55	...	...	...	[illegible]
·29	·40	·30	·92	2·06	2·30	1·08	·03	·01	·02	[illegible]

An examination of these statistics yields the following results: In *January* the mortality from Cholera was low throughout the districts during all the years under notice, excepting in Balasore town in 1884. In *February* the suffering was still lower generally, except in the Poori town, which was affected considerably. During both these months a large body of pilgrims were either traversing the districts, or had converged at the centres where the festivals were being held. From *March* to *May*, with an accession of pilgrims and dispersion of pilgrims, a distinct rise in mortality is seen generally, the Poori town the centre of attraction, the Salipur, Kendrapara, Aul, Jajpur and Dharmsala thanahs in Cuttack, through which the bulk of the pilgrims pass, and the Jellasore, Bhadrak and Dhamnagar thanahs in Balasore through which the direct pilgrim route lies, being seriously involved. It will be noticed that the Poori town enjoyed comparative immunity from the disease during May. In connection with this, it should be stated that a very large number of pilgrims had left the town this month, and was replaced by a comparatively smaller number. *June* is seen to be a month of somewhat diminished suffering. Cuttack and Poori (excepting the Poori town) shared largely this immunity, but Balasore exhibited greater suffering during 1882, 1883 and 1884. Although the car festival took place late in this month—on the 25th—the large assemblage of pilgrims in the Poori town would appear to have raised the mortality in it very much. *July* was, on the whole, pre-eminently affected by cholera, which was present generally throughout the three districts. It was during this month that the car festival broke up in Poori town and the pilgrims dispersed, re-traversing the pilgrim routes on their homeward journey. It is singular, however, that many circles escaped the severity of the disease in 1880 and 1883, particularly during the former year. In *August*, *September* and *October* there was a marked reduction of mortality. The pilgrims were absent to a great extent from the districts during these months. *November* and *December*, during which pilgrims, numbering 30,000, were present at the Panchak festival, and had also dispersed after it broke up, exhibited conspicuous rises in death-rates in many of the circles. It should not be omitted to be stated that in the Cuttack town and thanahs Tirtol, Banka, and Juggutsingpore, which were not frequented by pilgrims, there was very little cholera.

On the whole, however, I am not prepared to uphold the view that cholera is dispersed throughout Orissa entirely by foreign pilgrims and inhabitants of the districts, who largely frequent the different temples at times of festivals; yet there is, as shown above, such correspondence of disease with periods of festivals that this view cannot easily be set aside, and it must be remembered that this tends to explain the great rise of the disease in June and July, a time of comparative immunity from cholera in Bengal.

There is a pilgrim hospital at Poori and a dispensary at Pipli, and wayside shelters for travellers along the various roads. The camping grounds are, however, stated to be insufficient in size, and the wayside houses to be too small, badly supplied with water, and in an insanitary condition.

Having visited Poori, I feel that it is necessary to record that the present bad state of its water-supply and conservancy requires to be rectified, especially the former. Water is drawn from the usual shallow wells, and cannot be free from contamination in such a porous soil as the town stands on, which consists entirely of sand. It would be a gain to India generally if some pure water-supply were secured, and I submit that the subject is one well worthy of the attention of Government in the Public Works Department. The conservancy of the town could be greatly improved by the introduction of part IX of the Municipal Act III (B C.) of 1884.

Such cholera centres as Khurda and Pipli should also be placed in a thoroughly sanitary condition both as to water-supply and conservancy. The cost might be partly met from the Poori Lodging-house Fund.

94. *Balasore.*—The prevalence of cholera in this district was very great. It occupies the first place on the list of cholera-stricken districts in the whole Province. Seven thousand three hundred and seventy-three persons, or at the rate of 7·79 per 1,000 of population, were victims of the disease in 24·05 per cent. of the villages. The mortality exceeded that of the preceding year by 5·67 per 1,000, and that of the quinquennial lustrum

1879-83 by 3·56 per 1,000. The disease prevailed specially from January to July and again in November and December, but was most severe in May and June. The death-rates returned by the circles in this district are exhibited in the margin. All these circles may be said to be influenced by the pilgrims passing to and from Juggannath, yet cholera was by no means equally distributed over them, its extreme severity being limited to the urban and rural areas of Balasore and to the rural circles of Soro, Basudebpur and Chandballi, while Dhamnagar, Bhadrak, Jellasore, through all of which the direct pilgrim road from Cuttack to Midnapur passes, suffered in a very minor degree. As a rule the pilgrims are not permitted to enter the Balasore town in large numbers, but are made to travel by the trunk road, which just touches the outside of a detached part of the town, and where there are lodging-houses for their accommodation. There are also a pilgrim hospital at Balasore and charitable dispensaries at Balasore and Bhadrak to afford relief to sick pilgrims.

		Ratio per *mille*.
Basudebpur thanah	...	15·61
Soro "	...	16·08
Chandballi "	...	14·69
Balasore town	...	12·87
Balasore thanah	...	8·64
Basta "	...	4·62
Baliapal "	...	3·50
Bhadrak "	...	2·99
Jellasore "	...	2·64
Dhamnagar "	...	1·55

Cholera prevalence in Chota Nagpore.

95. This information is furnished in the following table:—

Districts.	Percentages of Villages Attacked.		Mortality in 1884.		Difference in 1884 in Death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Number of deaths.	Ratio per *mille*.	1883.	1879-83.	
Hazaribagh	2·29	1·02 *I*	1,286	1·16	·61 *I*	·79 *I*	April to August.
Lohardugga	·18	·54 *D*	191	·11	·22 *D*	·70 *D*	July and August.
Singbhum	·76	·51 *I*	112	·19	·13 *I*	·47 *D*	April and May.
Manbhum	5·74	4·43 *I*	1,849	1·74	1·45 *I*	·82 *I*	April to July.
Total ...	2·24	1·40 *I*	3,438	·79	·42 *I*	·06 *I*	April to August.

The above figures indicate that the incidence of the disease in the Chota Nagpore Division of the Province, although resulting in slightly enhanced mortality in comparison with the death-rates of 1883 and the quinquennium 1879-83, was, on the whole, not severe. The number of deaths amounted to 3,438 in 2·24 per cent. of the villages and among a population numbering 4,334,178, and the proportionate death-rate was ·79 per 1,000 of population. The corresponding figures of the preceding periods with which comparison is instituted, are for 1883, deaths 1,605, rate of mortality ·37 per 1,000 of population, and percentage of villages attacked ·84, and for the lustrum 1879-83, deaths 3,170, death-rate ·73 per 1,000, and percentage of villages pervaded by the disease 1·99. The unhealthiest months were April to August.

96. The history of cholera prevalence in all the four districts which compose the Chota Nagpore Division—*Hazaribagh*, *Lohardugga*, *Singbhum*, and *Manbhum*—may be considered together, as in none of them was the suffering noticeably great. From the figures furnished in the foregoing table it appears—

(1) That Manbhum suffered the most (1·74 per 1,000), Hazaribagh next (1·16 per 1,000), Singbhum in the third degree (·19 per 1,000), and Lohardugga the least (·11 per 1,000).

(2) That in none of these districts was the disease widespread.

(3) That in comparison with the mortality during the preceding year, while Lohardugga exhibited a decrease to the extent of ·22 per 1,000 of population, the other three districts exhibited increase, the increment in Manbhum only being noticeably higher, viz. 1·45 per 1,000.

(4) That in comparison with the incidence of the disease during the lustrum 1879-83, while Lohardugga and Singbhum were healthier, Hazaribagh and Manbhum returned higher mortality, but the increase was not great, amounting to only ·70 and ·82 per 1,000 of population respectively.

(5) That in seasonal fatality, April to August exhibited most deaths, and maximum severity was reached by Hazaribagh and Lohardugga in August, Singbhum in April, and Manbhum in May. No deaths were recorded in January in all the four districts, and Hazaribagh also enjoyed similar freedom during February, November and December, Lohardugga during February to April and October to December, and Singbhum during August, September and December.

(6) While noticeably high death-rates were not returned from any circle in Lohardugga and Singbhum, the areas of greatest suffering in Hazaribagh and Manbhum were :—

In Hazaribagh.	Ratio per *mille.*
Kodarma thanah	5·24
Chowparan „	2·78
Pachamba „	2·45

In Manbhum.	Ratio per *mille.*
Jaipur thanna	4·82
Nirsha „	4·79
Topechanchi „	4·68
Jheria „	3·11
Gourangdi „	2·38
Purulia „	2·31
Jhalda „	2·01

97. *Hazaribagh.*—The observations of Dr. Cobb, who has been for years in this district, are worthy of record, viz., that cholera always commences in March in the neighbourhood of the Grand Trunk Road, wherever traffic is greatest; spreads gradually over the lower levels of the district in the north and east; confines itself to these tracts until the rains have well set in; and at this period, if other meteorological conditions are favourable to its development, it rises to the higher parts of the district.

98. *Manbhum.*—Thanah Nirsha and Topechanchi, which suffered very considerably from cholera, are situated on the pilgrim route. A smart outbreak occurred among the colliers in the coal mines at Chirkoonda and the neighbouring villages. The Civil Surgeon notes that "the sanitary condition of Chirkoonda is very defective—bad water, miserable huts, accumulated filth lying promiscuously about, &c., and each year repeats the same sad story of epidemics of cholera and small-pox. Without exception this is the dirtiest portion of district." There are five tanneries in this locality, which have been for years a source of great nuisance. They are situated near dwelling-houses, and the moist hides which are put out on the sand to dry emit a sickening stench perceptible at a long distance. The hides are washed in the Burakur river, and the people of Chirkoonda drink this water, as there are no tanks there, and only eight wells, which are dry during the hot months.

99. **Port of Calcutta.**—Cholera prevailed with greater severity among the *European seamen* in Port, numbering 21,182, during the year under review, than during the preceding year, but with diminished severity in comparison with its incidence during 1881 and 1882. The subjoined statement supports this observation :—

Cholera among European Seamen.

	Average population.	Admissions to hospital.	Deaths.	Ratio per *mille.*
1884	1,684	67	36	21·37
1883	1,860	65	37	19·89
1882	1,792	64	41	22·87
1881	1,350	51	33	24·44

In addition there occurred one death from this cause out of hospital. The seasonal incidence of the disease in the Port followed the same course as it did in the town, viz., prevailing very mildly in January, increasing in severity from February, reaching maximum intensity in April (when 21 deaths occurred out of 36, the year's total), then declining to the end of the year with an exacerbation in November and December.

100. The disease also prevailed with abnormal severity among the *Native Floating population*. Compared with 1881, 1882 and 1883, the mortality was considerably higher during the year under review, *vide* undernoted figures:—

Cholera among the Native Floating Population.

	Population.	Admissions to hospital.	Deaths in hospital.	Deaths out of hospital.	Total deaths.	Ratio per *mille*.
1884 ...	25,409	95	38	100	138	5·43
1883 ...		69	34	82	116	4·56
1882 ...		54	27	88	115	4·52
1881 ...		32	16	54	70	2·75

It should, however, not be forgotten that with greater care and attention to the subject, particularly since the appointment of the Native Inspector, it is reasonable to expect that a larger number of the actual casualties occurring among the boatmen are being brought to light year by year, and that this fact might have had a share in producing the progressive increase in mortality exhibited in the above table. The most unhealthy months were March, April and May, when 46, 51, and 16 deaths were recorded respectively.

SMALL-POX.

101. SMALL-POX appears to have prevailed in the Province during the year under review with considerably aggravated severity in comparison with its incidence during the preceding year, as will be apparent from the following figures. The reported number of casualties amounted to 18,533 against 9,714 and the proportionate death-rate to population to ·28 per 1,000 against ·14 per 1,000. The disease prevailed with more or less severity in 53 circles against 30, and was absent from 224 against 284; and it invaded 2·96 per cent. of the villages against 1·73 per cent.

Extent of prevalence and fatality of Small-pox.

102. The urban and rural circles contributed to the mortality of the year in the proportions indicated in the margin.* It will be observed that the proportionate suffering, in comparison with that of 1883, was greater in the former than in the latter circles, and yet the general belief is that the urban circles are better protected than the rural.

Comparative mortality in the Urban and Rural circles from Small-pox.

	Deaths. 1884.	Deaths. 1883.	Ratio per *mille*. 1884.	Ratio per *mille*. 1883.
* Urban circles...	2,711	672	1·10	·27
Rural „ ...	15,822	9,042	·24	·14

Localities of severe prevalence of Small-pox.

The severity of the disease was noticeably great in the undermentioned 15 urban and 38 rural circles.

Towns.

	Ratio per *mille*. 1884.	1883.
Bhagulpore	9·05	·40
Hazaribagh	8·23	1·04
Gya	6·91	2·24
Sewan	3·07	1·87
Patna	2·57	·46
Beauleah	1·97	·05
Daudnagar	1·92	...
Deoghur	1·87	2·74
Raniganje	1·82	·18
Chupra	1·78	·18
Kendrapara	1·72	·89
Dacca	1·67	...
Kushtea	1·54	...
Durbhunga	1·24	·63
Bettiah	1·08	·09

Rural Circles.

	Ratio per *mille*. 1884.	1883.
Patna ...	6·61	·39
Ramganj in Noakhalli ...	4·66	·17
Baguha in Chumparun ...	2·59	·19
Gya	2·52	·24
Manjhi in Sarun ...	2·51	·44
Gowan in Hazaribagh ...	2·41	·14
Jehanabad in Gya ...	2·30	·22
Basuntpur in Sarun ...	2·17	·02
Rajowli in Gya ...	2·14	·11
Dinapur in Patna ...	1·94	·12
Kharakpur in Monghyr ...	1·90	·44
Buragaon in Sarun ...	1·84	·10
Hazaribagh ...	1·77	·21
Bhanpur in Poori ...	1·74	9·75
Barachati in Gya ...	1·73	·29
Darawali in Sarun ...	1·72	·64
Daudnagar in Gya	1·69	·11
Juggeswar in Hazaribagh ...	1·64	·26
Lowria in Chumparun ...	1·56	·19
Chatra in Hazaribagh ...	1·51	·01
Tikari in Gya ...	1·49	·23
Masauri in Patna ...	1·48	·19
Bikram in Patna ...	1·48	·17
Karimpur in Nuddea ...	1·47	·70
Gopalgunge in Sarun ...	1·44	·83
Govindganj in Chumparun...	1·38	·25
Hatia in Noakhalli	1·36	·34
Bankipur in Patna	1·35	·22
Kumarganj or Sultanganj in Bhagulpore ...	1·32	·52
Maner in Patna	1·31	·11
Aul in Cuttack	1·29	2·68
Aurungabad in Gya	1·29	·10
Tandowa in Hazaribagh ...	1·23	·01
Sewan in Sarun ...	1·20	·16
Chandpur in Tipperah ...	1·14	...
Adapur in Chumparun ...	1·07	·49
Sherghati in Gya	1·07	·32
Barhi in Hazaribagh ...	1·07	·07

It will be observed that the areas of highest suffering from small-pox mostly belong to the districts of Gya (10), Sarun (8), Patna (7), Chumparun (5), and Hazaribagh (7), and it was these districts which returned, on the whole, the highest death-rates, viz. 1·54, 1·27, 1·00, 1·00, ·85 per 1,000 of their population respectively. Of them Gya and Sarun have not as yet been touched by vaccination, Chumparun has been very partially protected, but Patna was said to have been thoroughly protected, excepting a few villages in each of its thannas, but the prevalence of small-pox in it proves that the statement is not to be relied on. The returns from Hazaribagh show that the children in it have for the most part been protected, but that a large number of the adult population are unprotected.

103. The marginal table, exhibiting the seasonal incidence of small-pox, repeats the experience of former years, viz. that the disease is most prevalent during the hot months of March to June.

Seasonal fatality of Small-pox.

	Deaths in 1884.	Average deaths in 1879-83.		Deaths in 1884.	Average deaths in 1879-83.
January	826	1,506	July	1,312	1,257
February	1,111	2,202	August	717	792
March	637	3,036	September ..	336	630
April	3,715	3,018	October	354	428
May	3,70[illegible]	2,[illegible]8	November	392	520
June	2,[illegible]13	1,886	December	585	873

104. From the table in the margin it is again seen that the largest number of deaths from small-pox occurred among infants and children, as no less than 72·27 per cent. of the total mortality from this cause was borne by them. In comparison with 1883 very nearly double the number of infants and children died from the disease. The mortality among male children was also, as usual, somewhat in excess of that among females.

Mortality among Infants and Children from Small-pox.

	Deaths.		Proportion per cent. of total mortality.		Proportion per cent. of males to females deaths.	
	1884.	1883.	1884.	1883.	1884.	1883.
Under 1 year	4,193	1,883	2[illegible]·62	1[illegible]·38	11[illegible]	107
1 to 6 years	6,528	3,297	3[illegible]·[illegible]2	33·91	115	114
6 to 12 "	2,674	1,721	11·42	17·71	120	115
Total under 12 years	13,395	6,901	72·27	71·01	116	112

105. The following information extracted from the local reports, relating to the incidence of the disease in some of the districts, may be found interesting.

Chief particulars relating to the prevalence of Small-pox in Districts.

106. *Burdwan*.—The disease was most prevalent in Mungulcote, Raniganj and Sahibganj, but it never took persistent hold of any locality. It was found that in the Burdwan town the disease was imported by travellers arriving by rail. In *Shahabgunge* there occurred 27 cases attended with 1 death. Vaccination was pushed on and the disease was suppressed. In *Beerbhum* the mortality from small-pox was more marked this year than in any year since 1878, and the cases were confined to thanas Soori, Bhulpore, Sacoolipore and Mouressur. After an immunity from the disease for several years, there were 2 deaths from it in the town of Soori during the year under review. Both of the deceased had been previously vaccinated, but the disease was communicated to them after importation by their neighbours. The cases occurred in May, when the vaccination season was over, and the efforts of the Civil Surgeon to establish lymph to arrest the development of the disease was fruitless; but the Magistrate says that the disease was apparently prevented from spreading by segregative measures and careful medical attendance. *Midnapore*.—For the past three years small-pox has prevailed with considerably mitigated severity in this district, and this improvement is credited to the progress made in vaccination. There were however a few local outbreaks marked with greater fatality than in 1883, notably in the Sabong rural circle, where vaccination is most objected to. A smart outbreak also occurred in village Chowsarpore in thanna Daspur. According to Assistant Surgeon Preumber Nath Mitter, Deputy Superintendent of Vaccination, Metropolitan Circles, the disease was introduced into the village by a person coming from Calcutta with it. He also noticed that of 10 families in this village who refused vaccination, small-pox appeared among 4. *Hughli*.—Small-pox in virulent form broke out in the Serampore Municipality. It was traced to importation by a man who had gone to Benares and returned with the disease.

Nuddea.—In this district the Kureemporo thanna suffered the most, as 152 casualties, which is more than half of the total deaths in the district (297), occurred here. The disease is always prevalent in this thanna and present throughout the year. The people do not resort to medical treatment, and the Ferazees—a sect of Mahomedans who will not accept of vaccination on religious grounds—were the greatest sufferers. A severe outbreak occurred in the *Kushtea* town, attacking 39 and killing 10. It was ascertained that the disease was introduced by a Kabuli. In *City Murshidabad* a boy aged twelve years, who had been vaccinated when he was two years old, was attacked. He also appears to have brought the disease from Calcutta. *24-Pergunnahs.*—The disease again prevailed with severity in the Suburban Municipality. Dr. Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, observed that Baliaghatta in this Municipality is resorted to by boats from all the Eastern districts where unprotected Ferazees abound, and he thinks that this is the locality through which small-pox is imported into this Municipality. In the *Baranagore* Municipality small-pox broke out among the up-country employés in the mills at Hupta bazar. It was said to have been introduced by a man who came from Behar. There were 26 cases and 2 deaths. *Dinagepore.*—The Magistrate says that, as the Dinagepore town is yearly almost wholly burnt down and thoroughly cleansed by fire, he thinks that for this reason perhaps small-pox gets no hold on the place. *Rajshahye.*—In this district only the town of Beauleah suffered severely. The disease appeared in it in April of the year under report and continued to prevail throughout the following months up to April 1885, with mitigated severity in September and October, and marked virulence during the remaining months. There is a municipal vaccinator in this town, and the Compulsory Vaccination Law has been in operation in it since 1881, and is said to have worked remarkably well. Notwithstanding these advantages, the mortality amounted to 1·97 per 1,000 of population against ·05 per 1,000, the highest in the rural area, with the entire absence of the disease from 9 circles out of 13 in this area. Under these circumstances, I cannot see how the Civil Surgeon can maintain his opinion that the municipality is "well protected." *Dacca.*—There occurred 135 deaths from small-pox in the Dacca town against none in 1883, 1882, 1880, and 1879, and only 3 in 1881. It thus appears that the immunity which this town enjoyed from the disease has ceased, and this is the more apparent as in the beginning of 1885 the disease was still prevalent, particularly among Mahomedans, who most obstinately oppose vaccination. The Civil Surgeon saw many cases of small-pox after inoculation as well as after vaccination, but none of the fatal cases seen by him had been protected in either way. Act V (B.C.) of 1880 should be introduced into this town. *Backergunge.*—It was observed that small-pox prevailed most in this district during the inoculating season, that is from December to July. *Mymensing.*—As in the preceding year, the Netrokona thana, which includes a large Garrow population, suffered most from small-pox, returning 126 out of 160, the total deaths of the district. *Chittagong.*—There were only 2 deaths from small-pox during the year, 1 in the Chittagong town, and the other in Bánskhali thana, and these cases, the Civil Surgeon suspects, were incorrectly diagnosed. The absence of the disease from this district, which has not received regular and systematic protection by vaccination, is remarkable. *Noakhalli.*—In this district the disease prevailed most severely in thannas Ramgunge, Hatia and Lukhipur, but the suffering is said to have been curtailed by vaccination. Nevertheless, the death-rates in these thannas amounted to 4·66, 1·36, and ·83 per 1,000 of population respectively. The Assistant Surgeon in charge attributes the reduction of mortality in this district to vaccination having been systematically carried on in it during the past two years. *Patna.*—There was considerably more small-pox in this district during the year under review than during the preceding five years. Every circle, excepting Barh town and Behar thana, exhibited enhanced mortality. The marked severity of the disease, considering that it occurred in the second year after the supposed completion of the vaccination of the district, demonstrates clearly that the vaccination done had been quite insufficient for the proper protection of the people.

Shahabad.—In this district the Arrah subdivision, in which vaccination was carried on during 1883-84, is found to have suffered more severely during the year under review than the other parts of the district. This result indicates that the vaccination establishment in Behar under the control of a Bengali Assistant Surgeon can only vaccinate a small proportion of the people. *Sarun.*—Small-pox prevailed very severely in this district, and was generally distributed throughout the whole district, every circle returning a higher death-rate. The prejudices of the people of all classes against vaccination are great and deeply rooted. Persuasion and general influence are of no avail. The Civil Surgeon advocates the introduction of the law prohibiting inoculation, as he says that unless this is done it will be quite impossible effectually to stamp out small-pox, particularly in years when it is generally diffused. But with the suppression of inoculation vaccination must be introduced, and this cannot be done with the present establishment for some years to come. *Chumparun.*—There was a good deal of the disease in this district, particularly in thana Baguha. This is one of the districts in Behar which has been very partially vaccinated. *Monghyr, Bhagulpore, Sonthal Pergunnahs.*—Small-pox prevailed generally in these districts, every circle being affected, notably those in their sudder subdivisions. Thana Kharakpore in Monghyr, thana Kumarganj and the town in Bhagulpore, and the Deoghur town were the localities of greatest suffering. It has been found necessary to depute a special establishment during the recess seasons of the past three years to suppress the disease in the affected localities; but as it re-appears yearly, I fear that the establishment does not evince sufficient care, attention and energy in the performance of their work. *Lohardugga.*—There was an extensive epidemic of chicken-pox in this district, prevailing, in fact, throughout the plateau. *Manbhum.*—Hossengunge, a thickly-populated portion of the town of Purulia, was threatened with a severe outbreak of the disease from a carter introducing it from Sitarampore, where it was very prevalent, but precautionary measures having been taken by isolating the carter and vaccinating all the unprotected, the danger was averted. In some badly sanitated villages in Chirkoonda, the disease appears annually among the colliers, and this year was no exception to the rule. There were 50 cases, but the disease was of a mild type and unattended with deaths. At *Kasipur* in thanna *Gaurandi*, there occurred an outbreak of small-pox commencing in February. It appears that a resident of the town went to the Baraker railway station and was infected there. On his return the irruptions appeared, and soon after some of his neighbours were attacked, and some others subsequently. The people endeavoured to hide the presence of the disease; nevertheless, with the assistance of the Police 200 of the children were vaccinated. Small-pox was absent from the *Darjiling* and *Julpaiguri* districts, and the *Bankura, Jessore, Khulna, Pubna, Maldah, Rungpore* and *Chittagong* districts were very mildly affected.

107. *Port of Calcutta.*—In the Port of Calcutta 7 cases against 5 in the preceding year occurred among the *European* seamen, but none of them proved fatal. Among the *Native Floating population* 5 deaths were reported to have occurred, being at the rate of ·19 per 1,000 of population against ·07 per 1,000 in the preceding year. Of these casualties 4 occurred in hospital among 9 who were admitted suffering from the disease. Of 4 steamers which arrived in Port with returning pilgrims from Jedda, 3 had small-pox on board, and were consequently detained at Garden Reach for fumigation and cleansing before proceeding to moorings. The Health Officer states that the condition of one of these steamers, the *Empress of India,* and the arrangements for the comfort of the passengers were satisfactory. This he ascribes to the judicious utilization of the new rules for the management of pilgrims by the native doctor, to whom a copy had been furnished. On the other hand, he found the condition of the passengers on board of another of these steamers, to which the rules had not been supplied, unsatisfactory, 14 cases of small-pox having occurred on board during the voyage, 5 among its European crew. It appears to him therefore that the general adoption of these rules in vessels conveying pilgrims would bring about an improvement in the condition of the passengers during the voyage.

FEVER.

108. The mortality due to this malady during the year under review was greater than in any of the preceding years of which records are in existence, as will be apparent from the figures in the marginal table. Nevertheless, I still consider that the enhancement of the mortality during 1884 is due mainly to improving registration as the subject is found to have received increased attention, and as the general fever history of the Province for the year under report does not, on the whole, show that it prevailed unusually, except in a few districts, a contingency common to every year. Moreover, an examination of the marginal figures shows that the numerical increase in the number of deaths has been steady year after year and has made large strides during recent years, during which more care has been accorded to registration, while no circumstances have occurred which justify the belief that the Province *generally* is getting more feverish than before. The disease was diffused in 1884 over 64·78 per cent. of the villages against 57·37 per cent. in the preceding year, and 64·80 per cent. during the quinquennium 1879-83. It manifested great virulence in 29 circles against 27, less activity in 116 against 130, and normal prevalence in 504 against 491.

Extent of prevalence and fatality of Fever.

	Deaths	Ratio per *mille*
In 1884	966,233	14 60
In 1871	164 505	2 56
„ 1872	237 868	3 59
„ 1873	303 645	4 59
„ 1874	328,721	4 97
„ 1875	368,087	5 56
„ 1876	561 537	8 49
„ 1877	711 036	10 75
„ 1878	742 887	11 23
„ 1879	622 260	9 41
„ 1880	689 605	10 13
„ 1881	940 911	14 23
„ 1882	929,943	14 06
„ 1883	913,766	13 81

109. The contributions by the urban and rural circles, respectively, to the mortality of the year are indicated in the table in the margin. The comparison with the figures of the preceding year again shows that while the proportionate death-rate in the urban circles had diminished, in the rural circles it had increased, establishing the inference of the preceding year that the rural circles are on the whole more unhealthy than the urban ones.

Comparative mortality from Fever in the Urban and Rural circles.

	Deaths		Ratio per *mille*	
	1884	1883	1884	1883
Urban circles	31,701	34,025	12 89	13 77
Rural „	934,532	879,741	14 66	13 81

110. The figures in the margin illustrating the seasonal incidence of fever in the entire Province again maintain the deductions submitted year after year, viz., that the severity of the disease begins and progresses in intensity after the rains have well set in, and is most virulent in January, October, November and December, especially in the two latter months, when the evaporation of moisture from the sodden soil is rapid and the daily range of temperature considerable.

Seasonal incidence of Fever.

	Deaths in 1884.	Rainfall in 1884 Inches.	Average deaths in 1879 83
November	111 846	53	99 899
December	104 582	04	100 123
October	88,424	5 08	80,794
January	85 281	05	73 328
August	77,188	9 33	62 756
April	76 711	2 63	59,548
September	75,375	8 91	66,555
March	73,702	83	58 302
May	71,070	6 06	55,053
February	69,883	79	57,918
June	66 223	12 04	49,359
July	65,258	11 27	55,662

111. This information is furnished marginally. The most noticeable point is that for three consecutive years the greatest amount of suffering was limited to some of the districts in the Burdwan, Presidency and Rajshahye Divisions. It is gratifying, however, to find that while the mortality was higher in Rajshahye (which again heads the list given in the margin), it has diminished in some of the worst districts.

Districts in which Fever prevailed most severely.

	Ratio per mille.				Ratio per mille.		
	1884.	1883	1882.		1884	1883	1882.
Rajshahye	30·40	30·12	24·24	Murshidabad	20 25	21 79	26 01
Nuddea	29 22	27·60	30·50	Birbhum	19 53	22 27	27 62
Pubna	27·45	22·43	17 97	Burdwan	18 81	23 35	28 86
Jessore	22·41	23·14	22 93	Khulna	18 52	17 53	18 65
Bogra	20 96	19 31	19·72	Julpaiguri	18 25	13 40	13 99
Gya	20·81	14·33	14 67	Rungpore	17 09	15 68	11 49

112. The more important statistics illustrating the incidence of fever in each district and the details of local outbreaks of the disease, which appear to be interesting and worthy of record, are subjoined.

History of the incidence of Fever in the Districts.

BENGAL.

113. In the Bengal division of the Province 584,893 deaths from fever were recorded in 70·42 per cent. of the villages among its registered population, numbering 35,073,770, the proportionate death-rate being 16·67 per 1,000. In 1883 there were 576,474 deaths, or at 16·43 per 1,000 in 67·94 per cent. of the villages, and during the lustrum 1879-83, 508,230 deaths, or at 14·49 per 1,000 in 69·46 per cent of the villages. These statistics indicate that the disease extended over a larger area in Bengal than during both the periods with which comparison is instituted, but that the mortality, while not noticeably greater than in 1883, was sensibly in excess of that of the lustrum 1879-83. It should, however, be recollected that registration was more defective during the latter period than at present. The most unhealthy months were as usual January to May and October to December, the latter period more so. As usual, there was more fever in Bengal than in any of the other divisions of the Province.

Incidence of Fever in Bengal.

114. In the following table are submitted the fever statistics of the Burdwan Division of Bengal :—

Incidence of Fever in the Burdwan Division.

Districts.	Percentages of villages attacked by fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille.	1883.	1879-83.	
Western Districts. Burdwan	85·68	2·18 D	26,190	18·81	4·54 D	4·96 D	January to March and October to December.
Bankura	59·92	2·55 D	14,128	13·56	3·15 D	2·59 D	January to March, October and November.
Birbhum	83·15	3·50 I	15,517	19·53	2·74 D	1·54 D	January to April and October to December.
Midnapore	66·33	1·41 I	37,208	14·79	·52 D	1·38 I	January, February, November and December.
Hughli	78·23	·63 I	14,236	14·02	·32 D	·77 I	January, February, November and December.
Howrah	66·44	2·29 I	5,333	8·30	·03 D	·25 D	January, November and December.
Total	70·26	·45 I	112,612	15·23	1·81 D	·99 D	January to March and October to December.

From the figures in the above table it is seen that while fever prevailed in the Burdwan division somewhat more extensively, its fatality was considerably less in connection with both the periods with which comparison is instituted.

115. *Burdwan.*—There was a very considerable diminution in fever prevalence and mortality in this district in comparison with its incidence during 1883 and the lustrum 1879-83. The death-rate amounted to 18·81 per 1,000 of population against 23·35 per 1,000 during 1883 and 23·77 during 1879-83, and 86 per cent. of the villages were invaded by the disease against 88 per cent. during the preceding year. The unhealthy months were January to March and again October to December, and the circles named in the margin exhibited the highest death-rates. It was observed that new cases of the ordinary malarious fever from which the district had long and largely suffered were fewer this year; but the number of people labouring from chronic fever with its usual complications was large, enlargement of the spleen among old and young being so remarkably common that Dr. Purves, the Civil Surgeon, is of opinion that 50 per cent. of the population have this affection. He also notes that the

	Ratio per *mille.*		Ratio per *mille.*
Kaksha thanna ...	25·82	Ausgram thanna ...	21·39
Burdwan town ...	25·49	Gangoor " ...	20·38
Purbusthali thanna ...	21·77	Burdwan " ...	20·12
Cutwa " ...	21 61	Mungulcote " ...	19·89

reduction of the fever is referable to the very deficient rainfall; "the soil never got properly saturated, and now tanks in Burdwan are very dry which were never known to dry up before."

116. *Bankura.*—In this district also there was considerably less fever. The death-rate stood at 18·56 per 1,000 of population in 60 per cent. of the villages against 16·71 per 1,000 in 62 per cent. of the villages in the preceding year, and 16·15 per 1,000 during the quinquennium 1879-83. The seasonal incidence of the disease corresponded closely with that in Burdwan, and the areas of greatest suffering were those indicated marginally. It is gratifying to learn from the Civil Surgeon that the fever which almost decimated the low-lying parts of the district bordering on Burdwan (thanas Bishenpore, Kotulpore and Indas, and the eastern portion of Gungajalghatti) in 1881, when the death-rate was 20·96 per 1,000 of population, has since been steadily declining in severity till during the year under review it caused the deaths of only 13·56 per 1,000 of the population. It cannot, however, yet be said that the incidence of the disease is normal. During this year the greater number of fever cases again occurred in the above circle adjoining Burdwan, where the land is flat and marshy and the natural drainage defective. Kotulpore and Bishenpore, which suffered most, are besides very badly drained and covered with jungle. On the other hand, the laterite tracts, where the soil is porous and the natural drainage very good, enjoyed comparative immunity from the disease, and here it is uncommon to find cases of advanced malarial cachexia. The Civil Surgeon attributes the decadence of the disease to uniform rainfall, which was in no month excessive, and to "the fact that the wave of malaria which spread over the district from Burdwan in 1882 seeming to have expended its virulence."

	Ratio per mille
Kotulpore thanna ...	20·63
Bishenpore „ .	18·16
Bishenpore town .	16·11
Indas thanna	16·07

117. *Birbhum.*—In this district a larger tract of country, represented by 3·50 per cent. of additional villages, was pervaded by the disease, and the death rate 19·53 per 1,000 of population was the highest in comparison with those of the other districts in the Burdwan Division. This mortality was, however, lower by 2·74 per 1,000 of population as compared with 1883, and by 1·54 per 1,000 with that during the lustrum 1879-83. The areas named in the margin returned the highest death-rates. It was noticed that in thana Bolpur the mortality was severe among old and worn-out sufferers. It is also said that in the town of Soori, while acute cases of most virulent type cropped up here and there, the mortality was by far the greatest among chronic sufferers. But on the whole, the health of the town was better this year than during the last, and this result was attributed by the Civil Surgeon to the same climatic cause that was in operation throughout the district, although grave defects exist in the sanitation of the town. Referring to the seasonal incidence of the disease, and to the influence of rainfall in diminishing its severity, he writes:—"Fever sets in with the monsoon and rages till the advent of the cold weather. The failure of rain this year kept the soil dry, and the cause of generation of malaria was thereby held in abeyance. Up to the end of July we had 21 inches of rain against 46 inches in 1883, and the total rainfall did not exceed 45 inches against the average fall of 60 inches for the last 20 years. Thus the relationship of fever with the quantity of rainfall has been always a constant phenomenon."

	Ratio per mille
Bolpur thanna	26·55
Soori „ .	27·30
Soori town	20·51
Sakulipore thanna	19·19

118. *Midnapore.*—In this district, while the prevalence of the disease extended over an additional 1·41 per cent. of the villages, there was a diminution in fatal results to the extent of ·52 per 1,000 of population in comparison with the death-rate of 1883, the total death rate of the district being 14·79 per 1,000 of population. But, in comparison with the mortality during the lustrum 1879-83, the death-rate was higher by 1·38 per 1,000. The circles marginally cited suffered the most, and the unhealthiest months were January, February, November and December. In connection with the prevalence of fever in this district, the Civil

	Ratio per mille.		Ratio per mille
Narainghur thanna ..	21·69	Keshpur thanna	17·69
Potaspur „ ...	20·25	Midnapore „	17·48
Debra „ ..	19·72	Sabong „ ...	17·01
Dantoon „ ...	19·43		

Surgeon makes the following observations:—(1) That the incidence of the disease has been on the decline since 1877, excepting that in 1881 there was an exacerbation. (2) That of late years the disease has taken strong hold of the thannas named above in the margin, excepting Keshpur. The Magistrate is of the same opinion. (3) That while the thannas in the north of the district, which originally suffered most, are having less fever, those in the south are becoming unhealthier, so that it is anticipated that when fever again prevails epidemically the whole district down to the sea coast will suffer. Dr. Ghose, the officiating Deputy Sanitary Commissioner, Metropolitan Circles, visited several thannas in this district, and I should have wished to have reproduced, had space permitted, his description of their sanitary condition, &c.; but I cannot refrain from submitting his observations with regard to the villages in thanna Panchkura. He says: "All these* villages, with the exception of churs Najooreh and Bilkota, are within the protective embankment along the right bank of the Roopnarayan river. The drainage from them is perfect, *i.e.*, all tide and flood water is excluded by means of embankment and sluice gates, and surface channels drain out the last dregs of rain water through these sluices when no longer required for paddy cultivation; the result is that no vestige of malarious cachexia is to be seen in the people. But the people of churs Najooreh and Bilkota living on *churs* generally inundated during the rains have well-marked signs of malarious disease in them. Those who wish to study the effect of drainage on malarial fevers and on agriculture ought to come here and see the condition of the people within the embankment. In the two villages on the *churs* outside the embankment the paddy crop is uncertain, liable to the rotting effect of inundation and the parching effect of drought. The pulses, as a rule, are affected by worms. The oil-seeds grow but indifferently. The only paying crop is water melons, which do well in the dry weather in all *chur land.* Whereas within the embankment, where no such thing as a bhil could be seen, the paddy was perfect, and I saw in many places after the paddy had been cut down, the pulses and oil-seeds have been sown broadcast and doing very well. Those who declare that well-drained land is unfit for paddy cultivation ought to visit these places. What struck me most in all these villages was the entire absence of low jungle—a state of things I have not seen in the deltaic portions of Bengal. I also observed that the people do not dig ditches in village sites for taking earth for their plinths or walls, but uniformly take 9 inches from the surface of their fields, which is soon replaced by silt washed down by rain. Water-supply is bad. There are some very small tanks, but owing perhaps to good drainage they are not so choked with weed as tanks generally are in Lower Bengal." I may add that, with regard to the villages in thannas Keshpur and Midnapore, he says that they are more or less malarious owing to being under the influence of the high level irrigation canal. There is no low-lying jungle nor many stagnant ditches to be met with. It is only a question of pent up moisture in the ground.

* Najooreh. | Kulbunda.
Kantali | Joogibereh
Bilkota. | Kalagachh.
Shilko | Gopalnugur.
Majnan. | Puncedpur
Kajman | Bathanbereh
Puribomanuh.

119. *Hughli.*—In this district also fever did not prevail with any marked or greater severity than during the preceding year, although a somewhat larger area of the country was pervaded by it. In comparison, however, with the lustrum 1879-83, there was increase in fatal results. 14·02 per 1,000 of the population died in 78·23 per cent. of the villages against 14·31 per 1,000 in 77·60 per cent. in 1883 and 13·85 during 1879-83. To the mortality of the year the Serampore subdivision contributed 1,167 casualties, or at 11·83 per 1,000 of population, which is in excess of the death-rate of the preceding year by 1·41 per 1,000. In seasonal incidence, January, February, November and December exhibited the largest number of deaths, and the circles named in the margin returned exceptional mortality. The villages in thanas Haripal and Kristonagore, and those in the vicinity of marshes and along the banks of the Kana and Sarasati nuddis, are said to have suffered very much owing to the channels of those nuddis

	Ratio per *mille*.
Hughli thanna ...	22·28
Pandua " .	19·51
Balagarh "	19·32
Shambazar town ..	18·77

having become obstructed. Referring to this obstruction, the Subdivisional Officer of Serampore writes: "I may here remark that the state of the channels of the Kana nuddi and Sarasati has greatly deteriorated since last year, and that there is reason to fear that the important and costly sanitary work which was completed when the water of the Damoodar was introduced into these streams is now going to ruin for want of a little attention and a trifling amount of expense. A large sum was spent in bringing water down from the Damoodar to these channels, and an immediate improvement in the health of the people was the result. Nothing whatever has been done to prevent the channels from being blocked up again and to protect them from pollution. They are becoming blocked up again by fishing weirs and by the collection of masses of floating weeds. The inevitable result must be that in a few years these channels will become as bad as ever, and the epidemic which depopulated the neighbouring villages will again occur. I must here express my total inability to understand a policy which spends lakhs of rupees on an important sanitary work, and then leaves that work to go to ruin in a few years in order to save an annual expenditure of a few hundred rupees. Possibly I may not correctly understand the facts of the matter. As far as I do understand them, however, the above appears to me to accurately summarize the facts of the case." The Civil Surgeon also observes that the channels are being silted up and in places masses of floating weeds obstruct them owing to weirs thrown across for fishing purposes, and that the villages along their banks are becoming unhealthy again. A copy of these remarks has been submitted to Government in the Public Works Department for orders. There was also a good deal of fever in the towns of Bhudressur and Kotrung and in the Connagur, Mahesh and Rishra wards of the Serampore Municipality at the close of the rains, and, as usual, most of the cases succumbed in the cold weather. Concerning the fever prevalent in Serampore, and its causes, Dr. Barker, the Civil Surgeon, writes: "This fever is endemic and of the usual intermittent type, of a recurrent nature, associated with hypertrophy of the spleen, diarrhœa, anæmia and anasarca. Sometimes it is of remittent character, and occasionally attended with typhoid symptoms, particularly about the beginning of the cold weather. It is of malarious origin, and dependent a good deal on the low swampy nature of the country, and damp atmosphere, hence it is least severe during the dry hot months, and is of maximum intensity at the close of the rains, when the air is saturated with moisture from extensive evaporation, the whole country being covered with water and loaded with deleterious matter from decaying vegetation. Of course, the water-logged state of the soil simply exaggerates the above conditions, but I do not believe that this is so much due to obstructed drainage from roads, railways, or embankments (which are mostly provided with sufficient waterways) as to the enormous silting that is steadily going on in all places, fields, roadside drains, channels, rivulets, &c. It is this in an almost level country that causes all the mischief." It is also suspected that a good deal of the fever in July and August is traceable to irrigation and exposure while planting rice.

120. *Howrah.*—It appears that in this district there was less fever than in any other district in the Burdwan Division. The death-rate amounted to only 8·39 per 1,000 of population in 66·44 per cent. of the villages as opposed to 8·42 per 1,000 in 64·15 per cent. of the villages in the preceding year, and 8·64 per 1,000 of population during the lustrum 1879-83. These figures indicate that registration is defective in the Howrah district. January, November and December were the worst months. None of the circles in this district presented conspicuously high death-rates. Dr. Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, says that some of the villages in thana Jaggutbullubpore situated along the silted up Kana nuddi are very malarious, and he observed that in the villages in thana Doomjoor malaria was the universal feature, low jungle abounded, and the Mahomedan bustees were filthy. "Those parts of the villages where men are employed in agriculture are clean, evidently because dung and sweepings are utilized as manure; but where they are employed in industry, such as tailoring, the heaps of dung and sweepings are left for years."

121. The statistics connected with fever prevalence in the Presidency Division of Bengal are presented in the subjoined table :—

Incidence of Fever in the Presidency Division of Bengal

Districts	Percentages of villages attacked by fever		Mortality in 1884		Difference in 1884 in death-rates as compared with—		Unhealthy Months
	In 1884.	Excess or decrease as compared with 1883.	Deaths.	Rate per mille.	1883.	1879-83.	
24-Pergunnahs	80·25	7·01 D	93,182	14·16	·54 D	2·02 D	January and October to December
Nuddea	98·[illegible]	10·[illegible]3 D	48,[illegible]83	[illegible]·22	1·82 I	[illegible] D	January to May, September to December
Jessore	47·18	6·04 D	13[illegible]	[illegible]·11	7·5[illegible] D	3·38 I	January to April, October to December
Khulna	6[illegible]·40	11·11 D	[illegible]	18·[illegible]2	[illegible]9 I	1·5[illegible] I	January and October to December
Murshidabad	87·37	9·82 D	[illegible]4,847	[illegible]0·[illegible]	1·[illegible]4 D	1·87 D	January to May, October to December
Total	78·86	8·36 D	183,174	20·99	·98 D	1·09 I	January to April, October to December.

The figures in the above table indicate that in comparison with 1883, a considerably less area of the Presidency Division was invaded by fever and the mortality was lower; but that in comparison with the lustrum 1879-83 the death-rate was higher by 1·09 per 1,000 of population. It is also seen that the mortality here was greater than in all the divisions of Bengal, excepting only Rajshahye. The percentage of villages attacked was 78·86 against 87·22, and the death rate stood at 20·99 per 1,000 of population as opposed to 21·97 per 1,000 in the preceding year and 19·90 per 1,000 during the lustrum 1879-83. As usual, January to April and October to December were the most fatal months.

122. 24-*Pergunnahs.*—In this district there was much diminution in both the prevalence and fatality of fever; 80·25 per cent. of the villages were overrun by the disease against 87·26 per cent. in the preceding year, and the death-rate fell to 14·16 per 1,000 of population (the lowest of all the districts in this division) from 14·70 per 1,000 in 1883 and 16·18 per 1,000 during the lustrum 1879-83. January and October to December were the worst months, and the suffering was greatest in the circles named in the margin.

	Ratio per mille.
[illegible] thanna	25·18
Bussirhat town	23·03
[illegible]	22·47
Habra thanna ..	21·90
[illegible]	21·18
[illegible]	21·16
[illegible]	18·87
[illegible] ..	17·31

The only noticeable remarks in the Civil Surgeon's Sanitary Report with reference to the prevalence of the disease in this district are that it prevailed extensively in the Baranagore Municipality after the cessation of the rains, particularly in its eastern portion, which is away from the river, attributed to the Eastern Bengal Railway obstructing the surface drainage of this portion of the town. This town is moreover full of excavations for brick-making containing stagnant water. The following facts came under the notice of Dr. Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles—(1) Malarious fevers prevail in thanna Joynuggur, which is low and swampy, and requires thorough drainage. (2) Some villages in thanna Barriepur, which had been the earliest reclaimed, were tolerably free from malaria, but in others, such as Nakahtollah, Satbebee and Gourdoho, the people suffered severely from fever attended with great mortality. In these obstruction of drainage resulted in stagnation of water during heavy rains. This defect was brought to the notice of Government by me. (3) Many of the children in several villages in thanna Bussirhat were found to be pale, scrofulous, and suffering from spleen. The sanitary condition of these villages is very unsatisfactory, the drainage bad, and the water-supply worse. (4) The washings of the lac-dye factory at Cossipur in thanna Tallygunge were allowed to find their way into the public drains, and in their passage to the river emit a foul smell and keep the drain constantly moist, and houses abutting on it remain always damp. (5) Some of the villages in thanna Habra were found to be fearfully malarious owing to the stagnation of the Jaboona river, particularly from Goburdanga to its junction with the Ichamutti. Dr. Ghose was of opinion that if this matter is not early attended to, it would be difficult and expensive to remedy the evil when the river has disappeared and its dry bed occupied by riparian proprietors. The question was referred to the Magistrate,

but I regret to state that while the Assistant Magistrate of Baraset, from whom a report on the subject was called for, supported the observations of Dr. Ghose, and added that, "as there is very little current in the Jabuna, its bed has been covered with sedges and decomposing vegetable matter of every description, spreading malaria all round the villages situated on its bank," and suggested the necessity of having surveys taken and plans prepared for opening up the channels of the Jabuna, the Officiating Magistrate of the 24 Pergunnahs district set the matter aside without even consulting the Commissioner of the division, his opinion being that, "it is useless to ask engineers for plans of works which will never be carried out and would be of doubtful utility if carried out." The question, however, as to the manner in which drainage is to be effected in places where the old drainage channels no longer exercise their original functions is a most important sanitary one and should be considered in the Public Works Department as funds and opportunity permit. The following observations of Dr. Ghose regarding the health condition of the villages in the Bistopore thanna, and the causes thereof, are worth recording :— "These villages* are all situated on the bhil (cultivated, and known as the bada) in connection with the Kowrapukhur nullah. The huts are peeping out of a vast sheet of paddy-fields, and almost every house has to be reached by means of a dug-out. Paddy cultivation, fishing, and *duck-farming* are their principal occupations. The people seem to be in perfect health, children fat and healthy, and women strong and hard-working, very different from what is seen in a Bengal village. This proves what I have always maintained, that moisture *per se* is not the origin of malaria. There is too large a quantity of water here for it to be injurious, and the paddy cultivation seems to keep it tolerably pure, drawing up all organic matter as manure, which would otherwise have decomposed to sustain the various breeds of microzymes and microphytes, some of which act as disease germs in man. An observation fell from the boatmen who were poling our dug-out, and it struck us both, me and Baboo Jadub Chandra Ghose, who accompanied me. The observation was this :—We asked the men what they thought of the *bada* water. They said that after much rainfall it is not good, but now that the paddy is forming *its thor*, it is very good. Now *thor* is the rudiments of the ear of corn in the pith of the stem before it shoots out. The formation of this must draw up a lot of manure from the soil and the water, and render the water free from organic impurities. This so accords with my own observation in many places that I cannot help putting it prominently here. Go to the south of the Khulna district and parts of Burisal, cultivated very largely with paddy, and there one cannot help being struck with the fine robust constitution of the people. It is only when the deltaic khals silt up and water lies on the surface without sufficient outfalls that malaria is observed." Under direction of Government I visited, in company with Dr. Ghose, the officiating Deputy Superintendent of Vaccination, Metropolitan Circles, the country drained by the Nawyee and Soortee nullahs, and investigated into the health of the locality and the causes of its deterioration. I found from an examination of the villages and especially the boys in the village schools, that the health of the people was certainly very bad. There was evidence of the effects of malarious poisoning in nearly everybody I saw, especially in the case of the young. There was formerly a much larger population, as was evident from the many deserted homesteads in every village site and in some places along the west bank of the Soortee within the Baraset Municipality, which now form a continuous line of jungle which is used for charcoal burning. The local opinion ascribes the causes of this deterioration to the condition of the nullahs, which are now completely silted up in places and blocked by the digging of tanks on their beds for water-supply and as fish ponds. In numerous instances these tanks extend right across the nullahs, only narrow side passages being left, which are now quite dry. Small bridges, approached by embanked roads, have also been erected in places, and must in the rainy season cause much obstruction from insufficient waterway. As the beds of the nullahs where they contain water and the tanks are full of rotting vegetation, the water, which is largely used by the villagers, is of the worst character, and must have a bad effect on their general health. I think that the state of these

* Panoka | Persadpore | Nusung Chuck | Audhu Mauk. | Julpay | Umerpota | Bolakhati

nullahs and of the bhils, which they should drain, where water is kept at a higher permanent level than formerly from the connecting khals having silted up and being obstructed with fishery weirs, is a fertile cause of the low standard of health to which the people have been reduced. The Pancearah khal, which drains the Kora bhil near the Chandipore station on the Central Bengal Railway and, it is said, seventeen other bhils, are now so silted up that the villagers said that from detention of water rice could not now be cultivated in places where this was formerly possible. The whole area under consideration is so intersected with roads and railways that there is no free passage of water over the low-lying paddy fields, as was the case before they were made. Sufficient waterway has been left in an engineering point of view, but not enough to allow of easy flow for heavy or even moderate floods. In places the waterway is distinctly insufficient, even at present (in January 1885). The opening out or reconstruction of these nullahs, which was under the consideration of Government, is, under the above circumstances, a matter of urgent necessity whereby improvement in the health of the people may be reasonably expected. It appears, however, that the basin lying between the Hughli and the Nowyee cannot be drained completely into the latter, as it is cut into two by a line of high village sites running from north to south, and that the outlet towards the salt lakes of the drainage of the South Barrackpur, Baranagar and Kashipur, and low lands lying immediately west must be provided for. I have visited these places also and seen their requirements, and think that the Dentia, Kamarhattee and Barrackpore khals should be sluiced in the same way as the Khurda khal, to prevent the great influx of river water into the ground which must be already water-logged in the rains; and I further support Dr. Ghose in his proposal that a drainage scheme for the South Barrackpur, Baranagar, South Dum-Dum and more than half of the North Dum-Dum Municipalities should be specially prepared, matured, and carried out at the cost of the Municipalities concerned, by Government utilizing the many levels which have already been taken up in railway construction and for other purposes.

123. *Nuddea.*—This is the fifth year in succession that this district has suffered heavily from fever. It again occupies the second place in the list of fever-stricken districts. It is gratifying, however, to observe that the disease affected a much smaller number of villages, the reduction being represented by 10·23 per cent. and that the mortality, although higher than in 1883 by 1·62 per 1,000 of population, was lower than during 1881-1882 and the mean death-rate of 1880 83 (during which it amounted to 35·36 per 1,000) by 6·32, 1·28 and 6·14 per 1,000 respectively. The subjoined table exhibits the mortality from this cause during the five years of its prevalence in the district, during which period altogether 34·13 per 1,000 of the population was carried off by it:—

		1884.	1883.	1882.	1881	1880.
PERCENTAGES OF VILLAGES IN THE DISTRICT ATTACKED BY FEVER		86	96	92	94	96
MORTALITY IN—						
Sudder Sub-division						
Hanskhalli thanna	.	38 83	37 38	44 06	61·07	41 21
Nokashipara ,,	.	34·45	36 86	45 86	41 37	39 56
Kaligunge ,,	...	29 63	39 06	50 52	74 27	34 64
Kishengunge ,,	.	28 92	30 70	46 66	61 29	40 12
Kishnaghur ,,		25 90	26 08	28 79	46 37	27·89
Kishnaghur town		21 61	30 35	34 42	40 56	54 01
Chapra thanna	...	20 78	22 28	38 87	48 73	30 21
Nobodip town	...	15 38	14·10	11 08	Deaths were not separately registered.	
Total of Sub-division	...	28·05	30 66	40 16	47 02	32 10
Ranaghat Sub-division						
Jaguli thanna	...	37 72	29 18	28 74	20 83	29·57
Ranaghat ,,	...	32·54	25 64	29·20	32 74	25·47
Chagda ,,	...	30 81	26 95	25 76	22 86	18 18
Santipur ,,	...	28 92	31 14	36 97	32·11	28·99
Ranaghat town	...	21 42	19 92	24 30	26·37	31·22
Santipur ,,	...	17·01	21·89	25·73	33 10	29 64
Total of Sub-division	...	30 21	26·44	28 38	26·49	24 06

	1884	1883	1882.	1881	1880
Kushtia Sub-division.					
Nowpara thanna .	29 68	29 15	21 88	46 05	32 36
Khumarkhali ,,	29 04	21 93	15 19	22 12	17 56
Kushtia ,,	28 31	23 86	21 38	33 70	20 83
Daulatpur ,, ..	28 08	27 05	21 81	19 71	17 69
Bhaluka , ..	25 87	21 85	18 96	28 33	28 76
Bhadulia ,, ..	21·97	21 88	15 78	25 55	20 24
Kushtia town .	12 55	12 65	12 14	7 46	9 95
Total of Sub-division	27 77	25 79	19 16	24 32	19 32
Chuadanga Sub-division					
Kalupol thanna	39 64	26 11	35 10	50 06	30 71
Chuadanga ,,	38 27	32 95	35 97	[illegible]	35 06
Jibunnagar , .	36 56	31 15	42 19	39 21	28·73
Alumdanga ,,	34 59	26 87	26 52	35 73	21 99
Damurhuda ,, ..	32 97	28 02	16 56	32 67	18 74
Total of Sub-division .	35 60	28 28	36 16	37 85	24 01
Meherpur Sub division.					
Meherpur thanna ..	32 17	27 15	32 11	190 93	157 88
Gangni ,	28 04	28 10	33 00	38 55	26 72
Tehatta ,,	26 81	29 59	37 39	16 66	33 91
Karimpur ,	23 04	23 11	21 03	33 72	23 60
Meherpur town	22 33	31 05	31 23	36 67	57 53
Total of Sub division	26 91	26 91	31 31	42 31	31 16
DISTRICT TOTAL ...	29 22	*27 60	30 50	35 51	26 11

The statistical inferences to be gathered from this table are—

(1) That there was a marked reduction in 1884 in the extent of country pervaded by the disease, as the percentage of villages attacked by it fell from 96, 92, 94 and 96 during 1883, 1882, 1881 and 1880 respectively, to 86 in 1884.

(2) That there was a decrease of mortality in the sub-divisions of Kishnaghur in the middle of the district, and Meherpur in the north, and an increase in the sub-division of Kushtia also in the north; while the sub-divisions of Ranaghat in the south and Chuadanga in the north maintained a more or less uniform high death-rate throughout the five years in question.

These facts indicate that the disease is gradually declining in severity; and it will also be noticed that the mortality in the towns during 1884 was considerably lower than in the rural circles, showing that they are returning to their normal health status. It is greatly to be hoped that this immunity will progress and be abidingly permanent.

In seasonal incidence, January to May were very unhealthy months with some mitigation of severity in February and May; through June to August there was a gradual decline of severity; but September to December exhibited markedly increasing activity, so much so that November and December were the unhealthiest months—December more so than November. This is, to some extent, contrary to the behaviour of the disease during the preceding years of its severe prevalence. The Civil Surgeon says that, in this district the silting up of the net-work of streamlets, which intersect in every direction the low-lying Gangetic delta land which constitutes the district, is perpetually going on on a vast scale. These rivulets are thus converted into either sand beds or chains of swamps, hollows and ditches. Another consequence of this silting is, that it tends to cause inundations in other areas along the direction these rivers may take in striking out new lines of discharge. Again, there are few properly constructed wells except in large towns, and the well water is in some places brackish. These form, in his opinion, potent causes accounting for the unhealthiness of the district. The fever in the Kishnaghur town is said to be probably due to the silting up of the old river, which ran formerly through the middle of it, joining the Jellinghi with the Churni, which has not only deprived the town of its only source of water for domestic purposes, but has also completely revolutionized its natural drainage, both surface and subsoil The former has to a small extent been remedied by providing masonry public wells, but the latter is difficult to remedy, although attempts have been made in this direction by joining, by means of a cutting, the series of low-lying

patches, swamps and tanks (which occupy most of the ancient river bed) with the two rivers which this extinct river once connected. This helps the surface drainage to some extent, and a little water also now runs along this cutting during high floods, rendering the water less impure in the hollows and tanks along the river bed. The following description of the nature and characteristics of the fever has been furnished by the Civil Surgeon:—"These fevers appear to be chiefly of a malarial nature. They are accompanied by enlargement of the spleen, progressive anæmia, emaciation, œdema, and general dropsy into serous cavities, and a tendency to recurring attacks of diarrhœa. There is frequently a scorbutic taint present, as evidenced by spongy and readily bleeding gums, thickening of subcutaneous tissues below the knee, and ecchymosis, vibices and petechiæ on the skin."

124. *Jessore.*—In this district the death-rate from fever was 22·41 per 1,000 of population in 77·18 per cent. of the villages, in opposition to 23·14 per 1,000 in 83·22 per cent. of the villages in the preceding year and 19·03 per 1,000 in the quinquennium 1879-83, indicating a diminution in both the prevalence and severity of the disease in comparison with 1883, but a considerable increase of mortality in comparison with 1879-83. January to April and October to December were the most unhealthy months, and the highest death-rates were recorded in the circles marginally cited.

	Ratio per *mille.*		Ratio per *mille.*
Harinakandu thanna ...	30·61	Kotechandpur thanna ...	23 77
Salikha " ..	30·29	Lohagora " ...	23·29
Sarsha " ...	28·71	Bagherpara " ...	22·70
Gaighatta " ...	26·38	Mohespur " ...	22·53
Bongong " ...	26·26	Monirampur " ...	21·80
Jessore town ...	25·77	Mamudpur " ...	21·69
Jhenida thanna ...	25·13	Narail " ...	19·80
Ganapota " ...	25·57	Kotwali " ...	19·38
Magura " ...	24·37	Godkhali " ...	19·10
Kaliganj " ...	21·19		

The Civil Surgeon's report furnishes no explanation regarding the prevalence of the disease in any circle on this large list of high suffering areas, except that "the general cause of ill-health is the water-logging of the country by interrupted drainage," but the Magistrate, as reported last year, doubts this statement.

125. *Khulna.*—In this district the mortality from fever, although not great, was somewhat higher than during both the periods with which comparison is instituted, but there was a decrease in the area over which the disease prevailed. The mortality amounted to 18·52 per 1,000 of population in 67·40 per cent. of the villages against 17·53 per 1,000 in 78·51 per cent. of the villages in 1883, and 18·09 per 1,000 in 1879-83. The months in which the highest mortality occurred were January and October to December, and the marginally noted areas returned the highest death-rates. It was observed that the intensity of the disease was more marked in the interior of the district than in the towns, where better sanitary arrangements obtain, but the Satkhira town has a reputation of being very unhealthy, supposed to be due to the tidal khal which runs through it. The Civil Surgeon ascribes the unhealthiness of the district generally to the excessive dampness of the soil, residence in ill-ventilated and ill-drained houses, want of conservancy, bad water-supply, use of unwholesome food and water, insufficient clothing, and seasonal changes. He notes that the northern part of the Satkhira Sub-division is particularly in a water-logged condition, due to the rivers having silted up and to the drainage being defective. Doctor Ghose, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, observed during his tour in the Kalarooa thana that the silting up of khals and the obstruction to drainage, caused by the embanked road from Sonaberiah to Chanduria, was rendering many villages in the thana more or less malarious; that the health of the town of Chanduria was menaced by the action of the khals on the east and south of it; and that at Chandanpur, a part of this town, and in the adjoining villages fever prevailed to a very great extent and was due to the same cause—obstructed drainage—as the drainage of these villages chiefly passes into a khal which crosses the abovementioned embanked road and is provided with only a small masonry culvert. The water-way through this culvert is so insufficient and obstructed that during the late rains the embankment was washed away to the extent of about 200 feet or so. The flood-water had passed over, but much of the water was still confined. Doctor Ghose would not be surprised if the unhealthiness of these villages is found to date from the construction of this road. On the other hand, he found the

	Ratio per *mille.*
Kalarooa thanna ...	23·02
Satkhira " ...	22·89
Magura " ...	21·79
Damuria " ...	20·95

villages in thana Assasooni to be perfectly free from malaria. These villages are situated along tidal rivers, have no low jungle, and the land is well under cultivation.

	Ratio per mille.
Dewanserai thanna	30 77
Manullabazar " ..	28 29
Jellinghi " ..	28 13
Assanpur "	26 21
Sagardighi " ...	25 88
Bogawngola "	25 19
Shamshergunj "	24 86
Nowada " ..	23 67
Shahnagar " .	21 63
City Murshidabad .	21 13
Rughunathgunj thanna ..	20 77
Gorabazar " .	20 66
Mirzapur " ...	19 86
Dowlatbazar " ..	19 86
Gokurn "	19 10

126. *Murshidabad.*—In this district also there was a considerable diminution in the extension and fatality of the disease, but the latter was still high. 81·97 per cent of the villages was pervaded by the disease against 91·79 per cent in the preceding year, and the mortality amounted to 20·25 per 1,000 of population, which is 1·54 per 1,000 lower than that of 1883 and 1·87 per 1,000 below that of the lustrum 1879-83. The unhealthy months were January to May and October to December, and the circles named in the margin suffered the most. In the Jungipore Subdivision, in which thannas Dewanserai (which suffered the most), Shamshergunj, Rughunathgunj and Mirzapur are situated, the water in the river Bhagirutti becomes stagnant during the hot weather, and that in the tanks is contaminated by bamboo leaves falling into it, and the soil is damp during and after the rains. Referring to the present year's health condition of the district, the Civil Surgeon, Dr. Shircore, attributes the reduction in the prevalence of fever to the raintall being deficient; but he repeats his statement of the previous year that the dampness of the ground and the humidity of the atmosphere, caused by the retention of rain water in the numerous and very extensive bhils throughout the district, the former beds of the Bhaghirutti, with high banks and no outlets, are the prolific sources of the fever in this district. The history of the last two years compared with former years corroborates, he says, this view of the matter.

Fever prevalence in the Rajshahye Division

127. The figures illustrating the prevalence and fatality of fever in the Rajshahye Division are contained in the subjoined table.—

Districts		Percentage of villages attacked by fever: In 1884	Excess or deficit compared with 1883	Mortality in 1884: Deaths	Ratio per mille	Difference in 1884 in death-rates as compared with—: 1883	1879-83	Unhealthy months
Central Districts (Central)	Dinajpur	85·58	5·65 I	24,454	16·14	1·03 D	1·15 D	January to March, November and December
	Rajshahye	94·42	2·95 I	40,608	30·40	·28 I	6·37 I	January to May, August to December
	Rungpur	66·64	11·01 I	35,867	17·09	1·11 I	4·06 I	January to July, November and December
	Bogra	69·10	7·05 I	15,897	20·96	1·65 I	1·41 I	January and October to December
	Pubna	68·60	·10 I	36,014	27·45	5·02 I	11·[illegible] I	January to May, October to December
Central Districts (North)	Darjiling	28·63	8·81 D	1,322	6·46	2·58 I	8·75 I	August to December
	Julpaiguri	79·57	33·62 I	10,614	18·25	4·85 I	6·05 I	April, May, November and December
Total		84·20	15·07 I	164,366	21·25	·62 I	3·20 I	January to April, October to December

In the Rajshahye Division 84·20 per cent. of the villages was visited by the disease against 69·13 per cent. in the preceding year, and the mortality stood at 21·25 per 1,000 of population against 20·63 per 1,000 in 1883 and 18·05 per 1,000 during the lustrum 1879-83. These statistics demonstrate that a considerably greater extent of country was invaded by the malady accompanied by a rise in the death-rate in comparison with the death-rates of both the periods with which comparison is instituted, the increase in relation to the latter period being considerable, viz. 3·20 per 1,000 of population. Moreover, this division was the most unhealthy in comparison with all the other divisions of the Province, due mainly to the severe prevalence of fever in the Rajshahye and Pubna districts, but had the true death-rate of Jalpaiguri and Rungpore been exhibited, a still more unfavourable state of matters would be disclosed. January to April and October to December were the unhealthy months.

128. *Dinajpur.*—In this district with an increase in the extension of the disease was associated a decline in its fatality. The figures are: percentage of villages attacked, 85·58 against 79·93 in 1883; death-rate, 16·14 per 1,000 of

population opposed to 17·17 per 1,000 in 1883, and 17·27 per 1,000 during the quinquennium 1879-83. The months of great unhealthiness were January to March, and again November and December, and the circles named in the margin exhibited exceptionally high mortality.

		Ratio per 1,000.
Dinajpur thana	...	93 52
Nawabganj		21 59
Mahidpur	..	19 93
Parbatipur		19 57
Gangarampur	.	19 55
Chintamon		19 15
Porsha		18 14
Pirganj		18 37

The suffering in all these areas, excepting Chintamon and Pirganj, was also very great in the previous year. It is noticeable that Dinajpur thana exhibited a considerably enhanced death-rate over that of 1883 (93·52 against 71·94), but no special reason has been furnished accounting for this exceptional and continued severity of the disease in this thana. According to Dr. Mukerjee, the Civil Surgeon, Dinajpur is proverbially a fever district—in fact "the abode of fever," and has been so for years past. The mortality from this cause has, however, been steadily declining (from 21·11 in 1878 to 16·14 per 1,000 this year) from causes unknown, except with regard to the town, where continuous efforts to improve its sanitary condition has been made since 1878, when a Commission enquired, under orders of Government, into the causes of its extreme unhealthiness and suggested remedial measures. It is remarked that the death-rate from fever in the town is, contrary to the general rule, considerably lower than that in the district, in fact so much so, that although a higher mortality was returned by it, to a more or less extent, from all the other death causes, the general death-rate has been so minimised by the fever death-rate as to be lower than the district general rate. Referring to the nature of the prevalent fever, Dr. Mukerjee says that "although generally of the intermittent type, the remittent type of fever, mostly of bilious nature, with congestion of liver, or spleen, or of both, in some cases continuing to the unusual time of 42 days, were not uncommon. Some cases were also seen to have all the symptoms of typhoid fever without the characteristic rash."

129. *Rajshahye.*—The suffering in this district was pre-eminently great. It headed the list of fever-stricken districts, as it did in 1883. The disease extended over nearly the whole of the district, as 94·42 per cent. of the villages were attacked, the percentage of the preceding year being 91 43. The death-rate was very high, 30 40 per 1,000 of population, greater than that of 1883 by ·28 per 1,000 and of the lustrum 1879-83 by so much as 6·37 per 1,000. Prevailing severely in January, the disease exhibited somewhat lower fatality through February to May. June and July were months of abated mortality, but not to an extent as would entitle them to be considered as exhibiting normal health. From September there was a rise in fatal results, which continued to the end of the year, December being the unhealthiest month and November next to it. It will thus be seen that the disease was present in the district, in more or less severe form, throughout the year. In all the circles in this district excepting the Beauleah town the mortality was high, *vide* marginal figures.

			Ratio per mille. 1884	1883
Bughmara thana		..	39 81	35 44
Lalpur	"		36 64	38 90
Nattore	"	...	31 02	30 89
Charghat	"	.	32 92	3[illegible] 29
Tanor			32 88	29 59
Beauleah	"		32 40	29 76
Puthia	"		31 82	41 09
Baraigram	"		29 87	28 98
Manda	"		27 64	21 34
Naugaon	"	.	27 20	24 33
Singra	"		22 58	22 73
Panchpur	"	.	21 16	25 29
Godagari	"	...	19 01	22·26

It is said that in thanas Panchpur and Singra, in which mortality was lower than in 1883, the water-supply is more or less permanent and fairly good, as the Atrai and Nagore rivers collect the drainage and pour it into the bhils to the east of Nattore, but that, on the other hand, in other tracts of the district, such as the south-east portion, where the channels of communication with the Ganges are silting up and rendering the water-supply precarious and short, excepting from wells, the mortality is very high. The Civil Surgeon fears that, as in Nuddea and Jessore, this silting up process will continue until finally the interior of the district will receive no water in flood time, and he suggests that wells be now dug in certain selected places to accustom the people to their use before the climax comes. The Magistrate also believes that the silting up process is doing much mischief, for he says that the villages on the Hoja river and places situated within the outpost of Durgapur have been suffering for the last three years from epidemic fever of the most virulent type attended with

excessive mortality; and that several of these villages have been depopulated or abandoned. This fever is due to the stagnant and unwholesome water of the Hoja river and of the adjoining bhils, which condition of the water is due to the mouth of the Dhobapara khal, which joins that river with the Mooshakhan river, and of other water-ways having silted up. It appears that steps were taken during the year to open out the abovementioned khal and two of the water-ways, by which the stagnant Hoja was to some extent flushed. Other remedial action in this direction, as also for cleaning out tanks and providing for irrigation, is under consideration. In connection with the high mortality caused by the disease, the Civil Surgeon submits that the fever of the past few years has left marks in the shape of debility, anæmia, enlargement of spleen, general dropsy, &c., and this deteriorated condition of the constitution he has no doubt causes much loss of life. The comparative immunity which the Beauleah town enjoyed from the invasion of the disease is very remarkable, considering that, notwithstanding some improvements, particularly with regard to the water-supply, which were effected in 1883, very grave sanitary defects yet exist in it as recorded in the portion of this Report dealing with the prevalence of cholera in this district.

130. *Rungpore.*—In 1883 this district suffered more severely than during the preceding year, but during the year under review there was a further enhancement both in the extension and fatality of the disease; for the death-rate amounted in 1884 to 17·09 per 1,000 of population, against 15·68 in 1883, 11·49 in 1882, and 12·43 during the lustrum 1879-83, and 66·64 per cent. of the villages returned deaths in 1884, against 55·03 per cent. in 1883 and 45 per cent. in 1882. The areas cited in the margin returned the highest death-rates. In seasonal incidence the disease was greatest in January, caused less mortality during February and March, commenced to decrease in severity from April, the abatement lasting till September, when it was lowest. It became active again in October, reached maximum intensity in November, and was severe also in December. It was observed that it is in the cold weather that the poorer classes, with debilitated constitutions, enlarged spleen, and anæmia, cannot withstand the severity of the cold, and succumb to it in large numbers. It is believed, however, that many of the casualties returned under the head of fever were due to acute pulmonary diseases, which during this season attack the weak and debilitated. The true death-rate of this district is a subject of much interest in connection with the mortality of the jail at the Sudder Station, and of others similarly situated. It is a pity the Civil Officers cannot approximate more nearly to the real facts than to return a death-rate of 17·09 per mille from fever, which of course includes all inflammatory diseases.

	Ratio per *mille*		Ratio per *mille*
Mitapukhur thanna	22·84	Kamarjunge thanna	19·88
Mahigunge "	22·03	Ingunj "	18·93
Saidulpur "	21·57	Rungpore town	18·84
Negeshwari "	20·81	Nisbetgunge thanna	18·21

131. *Bogra.*—In this district also, the prevalence and fatality of the disease had increased. 69·16 per cent. of the villages returned fatal cases, which proportion compared with that of 1883 exhibits an increase of 7·05 per cent. The mortality stood at 20·96, which is higher than that of the preceding year by 1·65 per 1,000, and that of the quinquennium 1879-83 by so much as 4·49 per 1,000. Exceptionally high mortality was returned by the circles named in the margin. In seasonal incidence the disease exhibited great virulence in January; from February to June it prevailed with abated severity; in July there was a rise; it was wide-spread "after the cessation of the rains in August, when the injured crops remained on the ground and rotted," and continuing to advance in severity, was most fatal during the last quarter of the year, during which the debilitated from prior attacks of the disease succumbed in large numbers. Thannas Nowabgunge and Khetlal, which suffered most, are in parts covered with dense jungle, and the drainage of these thannas as well as of Sherpur and Panchbibi, is imperfect and the water-supply deficient and impure owing to scanty rainfall and steeping of jute in it. Eating of improper food on account of failure of crops is also quoted as a cause of the prevalence of the disease.

	Ratio per *mille*		Ratio per *mille*
Nowabgunge thanna	27·12	Bogra town	21·84
Khetlal "	25·01	Sibgunj thanna	21·44
Panchbibi "	24·76	Dhunut "	20·40
Sherpur "	23·89	Bogra "	20·11

132. *Pubna.*—68·60 per cent. of the villages in this district was overspread by the malady against 68·50 per cent. in the preceding year, and the death-rate amounted to 27·45 per 1,000 of population, being 5·02 per 1,000 in excess of the rate in 1883 and 14·56 per 1,000 higher than during the lustrum 1879-83. Thus it is seen that with some extension of the disease there was a considerable rise in mortality. In fact this district stands third on the list of fever-stricken districts. January to May were months of great suffering, which subsided markedly during June to September, to rise again in October, and to culminate in severity in November and December. Excepting thanas Serajgunge and Ullapara, every circle in the district returned high death-rates, *vide* marginal figures. Referring to the causation of the severity of the disease generally, the Civil Surgeon says that the sudden rise of prices for food-grains in September had a disastrous effect on fever-stricken patients and other weakly persons. Defective nourishment and cold produced and kept up the complications of malarious fever. In nearly half of the dispensary patients and in a large number of the jail admissions there was found splenic enlargement and malarious cachexy. He again reports on the progressive deterioration of the health of the district. He says the mortality has risen from 9,401 deaths in 1880 to 36,011 in 1884. Improvement of registration accounts for a part of the increase, but he is of opinion that the improvement can by no manner of means explain the extraordinary rise, nor can it be attributed to any remarkable increase of the population or change in the jurisdiction of the district. It appears to him "that the same changes which have produced ill-health in the neighbouring district of Nuddea have been in operation here. The water-supply and drainage of several tracts of the district have recently been considerably interfered with by deltaic changes. In other places the steeping of jute fibre in the watercourses and tanks has been a most harmful source of pollution of water. As instances I shall bring into notice the silted condition of the Ichamutti river and the khal joining the Baral nuddi with the Dhulauri khal. The Ichamutti river, which joins the Ganges with the Brahmaputra river and runs through a very crowded portion of the district for 50 miles, had been a navigable river about 20 years ago. It is flooded now during the rains and is reduced to a series of stagnant pools during the dry season. The tract of country through which it passes, *i.e.* the Pubna and Dulai thanas, has been growing unhealthier every year. The silting of the khal between Baral nuddi and Dhulauri khal has been an occurrence within three or four years. I saw it during my inspection of a group of fever-stricken villages which have Bara Demra for its centre in thanna Shazadpore. Its condition is indescribable. It is simply the repository of all sorts of filth. All the khals I passed through during the rains were full of decomposing jute fibres. As rivers and khals are the principal channels of communication in this part of Bengal and supply important sanitary, commercial, and agricultural needs, they should be under the control and supervision of some local board or Government department." He is, moreover, of opinion that the "ill-health of the district has reached its culmination during the year under review."

	Ratio per *mille.*		Ratio per *mille.*
Dulai thanna ...	37·92	Mathura thanna ...	29·18
Chatmohur " ...	37·20	Raigunge " ...	27·90
Pubna " ...	33·09	Pubna town ...	26·33
Serajgunge town ...	30·13	Shazadpur thanna ...	24·55

Of local outbreaks of the disease the following may be cited. The severity of the disease in the Serajgunge Municipality, which had suffered to a limited extent in the preceding year, was great in the extreme. Not a single house was free from it. The fever was of the remittent or continued type in many cases. The bustees which suffered most are situated on low, undrained, swampy lands and surrounded by dense clumps of bamboo-bush which shut out sunlight and perflation of air. They are honey-combed with excavations which receive night-soil, cowdung, kitchen-refuse, and house-drainage. In contrast to these bustees it is remarked that the cooly lines at the Nasimpore mills, where the conservancy arrangements are very satisfactory, did not suffer from fever during the year. The Civil Surgeon records the following peculiarities connected with fever prevalence in the town of Pubna. "A number of mixed cases of fever and cholera occurred in October and November, when both these diseases were prevalent. After suffering from continued or remittent fever for 24 or 48 hours, the patients were attacked

with choleraic symptoms. In most of these cases the vomit and the motions were of a reddish tinge, watery, with much epithelial debris. Colicky pain was noticed at the commencememt in some, but it was absent in some cases. Collapse was marked in all the cases. In more than half the cases there was a recurrence of the fever. Many of these were favourable; others passed from the state of collapse to re-action; several died in the state of collapse, and several from uræmic poisoning. This was a curious mixture of two disease poisons." The villages of Bara Demra and Ratan in thana Shazadpur were reported to be suffering severely. The Civil Surgeon, who visited the localities, saw a number of spleen cases, but found the mortality to be insignificant. These villages are situated on the banks of a khal which has been silted up within three or four years; they are jungly and abound in pits and excavations containing filth, and the foot-paths are used for purposes of nature. However, in the same thana the villages of Pangashy, Ullaparah, Soobgachy, Nowpur, and Shazadpur suffered very much. These villages are also said to be very filthy. It was noted that here the poor suffered more than other classes, and that in consequence of the prevalent high prices for rice they were driven to live on " kaon, " a kind of grain.

133. *Darjiling.*—The prevalence of fever was not great in this district. Nevertheless it displayed much greater severity than during past years. Deaths were reported from 28·63 per cent of the villages against 32·44 per cent in the preceding year, and the death-rate stood at 8·46 per 1,000 of population as opposed to 5·88 during 1883, and 4·71 during the quinquennium 1879-83. August to December were the most unhealthy months, and comparatively the mortality was greatest in the Kurseong and Darjiling thanas and in the Darjiling town, where the deaths amounted to 11·43, 10·30, and 8·90 per 1,000 of population respectively. The high mortality in Kurseong is considered peculiar, as this circle is situated on the hills, much of it above the general fever level, but parts are very feverish. It was observed that a larger number of deaths occur in the hills than in the Terai, but it should be remembered that the Compulsory Registration Act is not in force in the plains. Nevertheless, Nanubari, Nuksulbari, and Matigura, which have the reputation of being the most unhealthy localities, and which are all situated in the Terai, suffered much from fever. Dr. Wood, the Deputy Sanitary Commissioner, Darjiling Circle, observes that " the physique of the plainsmen is poor. They are lanky Hindu shopkeepers, and fever is their bane. Their habits of squatting and urinating into the catch-water area of the watercourse and keeping their house-neighbourhood in a mess cannot improve their health"; but that " the physique of the Paharee population is admirable. Their health is doubtless affected by their filthy habits and occasional gorging and drinking to excess."

134. *Julpaiguri.*—In this district the disease prevailed extensively, considerably more so than during the preceding year, and the mortality was also much higher, as will be seen from the following figures :—79·57 per cent. of the villages were pervaded by the disease against only 39·95 per cent. in the preceding year, and the death-rate amounted to 18·25 per 1,000 of population as opposed to 13·40 per 1,000 in 1883, and 12·20 per 1,000 during the lustrum 1879-83. The suffering was greatest in the circles named in the margin. The severity of the disease commenced to be felt during the second quarter of the year, when the rains set in; during the third quarter its incidence was low; but during the fourth quarter, when the rains had subsided and " the water commenced to evaporate from low swampy lands and the emanation of gases from the decomposed vegetation began to rise," the disease became virulent and the mortality was very high. The fever in the Julpaiguri and Boda thanas, where it prevailed extensively, is referred to the poorer classes not having sufficient to eat owing to the high prices which obtained for food-grains, the consequence of failure of crops. In general the malarious climate of the district is quoted as causing the disease. The Duars, which are densely covered with jungle, are particularly unhealthy in this respect The Deputy Commissioner observes that the mass of the population in the district are very unhealthy. " The lower orders are

	Ratio per mille.
Julpaiguri thanna	27·40
Patgram „	22·82
Mynaguri „	22·22
Salbari „	20·89

one and all surcharged with malaria, and it is the exception to find very old men." The Civil Surgeon says that the fever of this district is easily amenable to treatment, but the people do not seek for relief till days and months have elapsed, and when the usual complications have set in, and that thus they are reduced to so low a state that asthenic diarrhœa or dysentery supervenes and death follows.

Incidence of Fever in the Dacca Division.

135. The fever statistics of the Dacca Division are furnished in the subjoined table:—

Districts.	Percentage of villages attacked by fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with –		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille.	1883.	1879-83.	
Eastern Districts. (*Dacca Division*)—							
Dacca ...	68·03	12·30 *I*	28,308	13·37	·02 *D*	2·20 *I*	January to April, November and December.
Faridpore ...	49·79	6·96 *D*	19,277	11·81	1·71 *I*	3·37 *I*	January and October to December.
Backergunge ...	60·97	3·58 *D*	9,406	15·46	·89 *I*	3·67 *I*	Ditto ditto.
Mymensing ...	50·46	9·32 *I*	26,497	8·68	·46 *I*	3·59 *I*	Ditto ditto.
Total ...	46·71	3·99 *D*	103,488	11·89	·67 *I*	3·23 *I*	Ditto ditto.

In this division fever appears to have extended, on the whole, over a less area and the mortality to have been low. The latter was however a little higher than during the preceding year, but considerably greater than during the lustrum 1879-83. The figures in support of these observations are: percentages of villages invaded by the disease, 46·71 against 50·70 in 1883; death-rate per 1,000 of population 11·89 against 11·22 per 1,000 in 1883 and 8·66 per 1,000 during 1879-83. The unhealthy months were January and October to December No deductions, however, can be drawn from such defective registration.

136. *Dacca.*—In this district 68·03 per cent. of the villages were overrun by the disease against 55·73 per cent. in 1883, and the mortality stood at 13·37 per 1,000 of population in opposition to 13·39 per 1,000 in 1883, and 11·17 per 1,000 during the lustrum 1879-83, indicating increased extension of the disease associated with almost equal mortality as contrasted with the first mentioned, but considerable increase of mortality in comparison with the last mentioned period. The local authorities state that the increment in the number of deaths recorded is due to improvement in registration. Severest seasonal suffering was experienced during January to April and again during November and December, and the highest mortality was returned by the marginally noted circles.

	Ratio per mille.
Harirampore thanna ..	25·00
Jaffergunge " ...	22·66
Nowabgunge " ...	17·12
Manickgunge " ...	17·08

In the Manickgunge Sub-division where, according to the Magistrate, fever is severe even in a healthy year, and where it is as prevalent and as fatal as in any part of Burdwan or Hughli, the most malarious thanas are Harirampur, Jaffergunge and Manickgunge, from causes which have been fully submitted in the reports of former years. Briefly summed up, they are—the general tendency towards silting up of the entire river system of the district, which while affecting the whole district, affects those thanas as well as Nowabgunge more markedly, owing to their being surrounded on all or several sides by rivers which have ceased to be navigable except during the rains, and at the same time to their being underlain by an impermeable layer of blue clay. Deficient rainfall and want of good drinking water also help to promote the unhealthiness.

137. *Faridpore.*—In this district with a reduction in the area invaded by the disease was associated an increase of mortality. 49·79 per cent. of the villages were affected against 56·75 per cent. in the preceding year, and the death-rate was 11·81 per 1,000 of population against 10·10 per 1,000 in 1883 and 8·44 during the quinquennium 1879-83. The cold months of January and

October to December were the most fatal, particularly December, and in the localities indicated in the margin the highest mortality occurred. The Civil Surgeon is of opinion that it is more the sequelæ of the fever than the disease itself which caused most of the mortality, and he can safely say that the same causes which produced fever in the Burdwan and Nuddea districts were in operation in Faridpore, viz., "saturation of the soil with moisture and organic matters from obstructed drainage, probably due to artificial obstructions, but more probably to obstruction caused by the silting up of the beds of rivers and khals, which is continually going on in this district, and which serve the purposes of deep drains in the porous soil of these districts." He adds that experience shows that inundations, particularly when they are prolonged, are unfavourable to fever; but that, on the other hand, rainfall increases fever considerably, as is very plainly seen in the western thannas, which are situated high above the level of the floods, and where fever is more or less severe in proportion to the rainfall in the second and third quarters of the year. Considerable portions of thannas Goalundo, Pangsha, Belgachi, Bhushna, Muksudpore, Gopalgunge, Palong and Faridpore are situated on the banks of large rivers—the Pudda, the Madhumatti, the Kirtinasha. Most portions of thannas Bhanga, Awanpur, Madaripore and Kotalipara are away from the big rivers. Very large portions of thannas Muksudpur, Bhushna, Awanpur, Kotalipara, Madaripore and Gopalgunge are very low and swampy, and form a chain of bhils situated between the right bank of the Pudda and the left bank of the Madhumatti.

	Ratio per *mille*.
Faridpore town	19·87
Faridpore thanna	15·96
Pangsha "	15·28

138. *Backergunge.*—In this district the incidence of the disease was identical with that in the abovementioned district, viz., decline in extension with enhancement of mortality. The figures are—percentage of villages affected 60·97 against 64·55 in the preceding year, and death-rate 15·46 per 1,000 of population against 14·57 per 1,000 in 1883, and 11·79 per 1,000 during the lustrum 1879-83. In seasonal fatality, January exhibited much severity, which abated through February to September, July and August being the healthiest months. After this, simultaneously with "the drying up of the soil and the concentration of malaria, aided by the comparatively low temperature causing chills and predisposing the native constitution to attacks of the disease," there was a steady rise, December being the unhealthiest month. The areas of greatest suffering are cited marginally. The Civil Surgeon is of opinion that the fever mortality is swollen by the inclusion in it by the ignorant chowkidars of all acute inflammatory diseases in which fever is a prominent feature. He notes that Backergunge is by no means a malarious district in comparison with the other neighbouring districts, as only mild cases of ague are, as a rule, seen, remittents or chronic malaria being rare. Moreover, out of 140 *post mortems* performed by him, it was quite exceptional to meet with an enlarged spleen. The jail statistics and the aspect of the people also support, he says, his view of this question, viz., that the majority of the people do not suffer from malaria and its sequelæ. An outbreak of great severity which occurred in Alikanda, a most unhealthy quarter of the town of Burisal, is attributed to obstruction of natural drainage caused by the want of culverts.

	Ratio per *mille*.
Mendigunge thanna ...	20·27
Burisal " ...	20·03
Golachipa " ...	18·53
Gulisakhali " ...	18·10
Nalchiti " ...	18·04

139. *Mymensing.*—This district would appear to have been the healthiest compared with the others in the Dacca division, as the casualty rate amounted to only 8·68 per 1,000 of population. Nevertheless, it was higher than during 1883 by ·45 per mille, and during the lustrum 1879-83 by 3·59 per mille. Moreover, the disease prevailed more extensively than during 1883, an additional 9·32 per cent. of the villages having been attacked. The individual years which comprise the above indicated lustrum witnessed, it was observed, a steady rise in the prevalence of the disease. The most fatal months were January and October to December, and the suffering was greatest in the Pingna thanna and Jamalpore town, in which the people died at the rates of 23·18 and 20·32 per 1,000 of population. The extensive prevalence of the fever is referred for the greater part of the district, especially those parts drained

by the Brahmaputra and its tributaries, to the inundation of the rivers being, as compared with previous years, very little, so that many of the khals could not be swept out clean by it, but were left stagnating and covered with green vegetation. The lowness of the inundation this year in connection with an increase of the disease bears out, it is asserted, the oft-repeated view that the less the inundation the unhealthier the country. This condition of the khals was rendered worse by the steeping in them of jute, and the water of these khals was observed by the Civil Surgeon during his tours in August and September to be used for all purposes. In the Netrokona thanna the above general cause operated to a large extent. Thanna Ishwargunge is entirely dependent for its water-supply on the khals which intersect it, and which are in the same condition. Moreover, a large part of the district along the foot of the Garrow hills is Terai, and necessarily prone to malarious diseases. In the Guffergaon thanna many of the coolies who had flocked in large numbers to the railway works died while clearing the jungle through which the line passes. Last year it was observed that the river Brahmaputra had changed its course at about a quarter of a mile from the town, leaving only a very narrow and shallow channel close to it. This year by means of artificial obstructions placed at various points by the Municipality and the Road Cess Department at the suggestion of the Civil Surgeon, the main channel has been made to run quite close to the town. This, the Civil Surgeon observes, is a matter of great sanitary and commercial interest, but near the European quarter and the civil station there is a very large chur with low scrub on it, a very narrow branch or khal of the river intervening. The volume of water in the river was much the same in December this year as it was during the same month last year, viz. 3,027 cubic feet per second, against 2,696 cubic feet, as opposed to 4,496 cubic feet in December 1878. This condition of the river, it is believed, has influenced and will further influence the drainage of the adjoining country to a serious extent. The work of keeping the river open has been abandoned by Government since the railway was commenced. In the report of 1883 the Civil Surgeon expressed a strong opinion that the increase in the amount of fever in the sudder station is due in a great degree to the silting up of the river.

Incidence of Fever in the Chittagong Division.

140. The following statement exhibits the mortuary statistics in relation to fever of the Chittagong Division of Bengal:—

Districts.	Percentage of villages attacked by fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille.	1883.	1879-83.	
(Chittagong Division.)							
Eastern Districts. Chittagong ...	86·40	7·18 *I*	11,748	10·37	·27 *I*	1·04 *D*	January and October to December.
Tipperah ...	70·00	2·09 *I*	16,520	10·87	1·27 *I*	2·66 *I*	November and December.
Noakhally ...	73·12	1·78 *I*	12,980	15·81	2·00 *I*	1·81 *I*	January and December.
Total ...	72·96	2·85 *I*	41 248	11·87	1·11 *I*	1·25 *I*	January and October to December.

In this Division the disease appears to have overrun a greater extent of country and to have proved more fatal than during past years. 72·96 per cent. of the villages was attacked against 70·11 per cent. in the preceding year, and the casualty-rate (which cannot be said to be very severe), amounted to 11·87 per 1,000 of population as opposed to 10·76 per 1,000 in 1883, and 10·62 per 1,000 during the lustrum 1879-83. The most unhealthy months were January and October to December.

141. *Chittagong.*—The disease pervaded a very large tract of this district, and while the mortality was slightly higher than during the preceding year, it was much below that of the lustrum 1879-83. The figures illustrating

these observations are: percentage of villages affected 86·40 against 78·92 in the preceding year, and death-rate 10·37 per 1,000 of population against 10·10 per 1,000 in 1883, and 11·41 per 1,000 during 1879-83. The severity of the disease was felt most during January and October to December, but in no circle, excepting Hathazari (16·59 per 1,000), was the mortality noticeably high. The local reports do not present any information worthy of record in connection with the incidence of the disease in this district.

142. *Tipperah.*—In this district a further extension of the disease took place, and the mortality was sensibly in excess of the rates of past years. 70 per cent. of the villages was attacked against 67·91 per cent. in the preceding year, and the death-rate was 10·87 per 1,000 of population against 9·60 in 1883, and 8·21 during 1879-83. The unhealthy months were November and December, but no circle returned a conspicuously high death-rate. The Civil Surgeon, Dr. ffrench-Mullen, doubts whether the fever is attributable to malaria, which appears not to be at all prevalent in this district. His *post mortem* examinations from several parts of the district exhibited, he says, the size of the spleen very small in most bodies, and in no case was it enlarged. He believes that deaths from diseases not attended with diarrhœa or dysenteric symptoms are indiscriminately classed as deaths from fever. But, on the other hand, the district is very swampy and thickly covered with jungle, especially in the north and to some extent in the south and west. The water-supply during the dry season is also bad. It is in these places that fever mostly prevails.

143. *Noakhalli.*—The incidence of the disease in this district was identical with that in Tipperah, viz. extension of prevalence with higher mortality. The figures are: percentage of villages from which casualties were reported, 73·12 against 71·34 in the preceding year; and casualty-rate 15·81 per 1,000 of population against 13·81 in 1883, and 14·00 during the lustrum 1879-83. While the disease was most fatal in January and December, it maintained, with slight fluctuations, an uniformly high rate of mortality during all the intervening months. The circles which presented the highest death-rates are named in the margin. The fever was of a malarious type, often complicated with enlarged spleen. In connecting fever with inundations the Assistant Surgeon in charge of this district says that, the annual flooding keeps the district damp and is a prolific source of the disease. The Magistrate disagrees with him, as he finds that Sundip and Hatia, which receive as much flooding as any other part of the district, are comparatively freer from fever. It is, he says, where the water finds no egress after the rains that vegetation rots and produces fever, and that the contrary condition does no harm.

	Ratio per mille.
Chagalgauya thana ...	18·96
Ramni „ ...	17·54
Lakhipur „ ...	16·76
Sandip „ ...	16·75
Hatia „ ...	16·52

BEHAR.

144. In the Behar Division of the Province the number of casualties amounted to 301,332 in 62·55 per cent of the villages among its population numbering 23,127,104, the proportionate death-rate being 13·02 per 1,000. The records of 1883 show the percentage of villages attacked at 49·26, and death-rate at 11·29 per 1,000, and those of the lustrum 1879-83, the percentage of villages affected at 61·28, and the casualty-rate at 10·29 per 1,000. These figures demonstrate that the disease prevailed more extensively than in 1883, but less so in comparison with the lustrum 1879-83, and that the mortality was in excess of that of both the periods with which comparison is instituted, viz. by 1·73 and 2·73 per 1,000 of population, respectively. The suffering was greater in Behar than in the other divisions of the Province, Bengal excepted. In seasonal incidence the disease presented the following features:— the mortality was low during the first three months of the year, when the rainfall amounted to only ·09 inch; rose in April with a rainfall of ·48 inch, abated somewhat again in May, during which 2·35 inches of rain fell; but maintained a high rate from June to the end of the year, August and November being the unhealthiest months, the mortality in both months being the same. The aggregate amount of rain during this period was 33·60 inches.

Incidence of Fever in Behar.

Incidence of Fever in the Patna Division.

145. The fever statistics of the Patna portion of Behar are presented in the subjoined table :—

Districts.	Percentage of villages attacked by fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille.	1883.	1879-83.	
West Behar. Patna	67·14	3·95 D	25,982	14·73	1·76 I	·40 D	June to November.
West Behar. Gya	77·92	27·99 I	44,221	20·81	6·48 I	8·19 I	July to November.
West Behar. Shahabad	75·47	3·84 I	25,319	12·88	·22 I	1·99 I	August to October.
West Behar. Mozufferpore	68·80	7·03 I	22,698	8·79	·45 I	1·00 I	October to December.
West Behar. Durbhanga ...	35·96	·28 D	22,248	8·44	1·62 D	·15 I	January and November.
West Behar. Sarun	41·72	6·78 D	20,648	9·05	3·15 I	3·67 I	July to September.
West Behar. Chumparun	26·38	4·13 D	21,597	12·51	1·76 I	5·80 I	June to December.
Total ...	54·98	3·74 I	182,613	12·12	1·62 I	2·79 I	June to December.

In the Patna Division the prevalence and fatality of the disease were greater in 1884 than during the periods with which comparison is instituted ; but, on the whole, the area covered by the disease and the mortality were not inordinately large. The following figures support these observations. The percentage of villages overrun by the disease was 54·98 against 51·24 in the preceding year, the additional percentage of villages involved being 3·74. The death-rate amounted to 12·12 per 1,000 of population as opposed to 10·50 per 1,000 in 1883, and 9·33 per 1,000 during the quinquennium 1879-83, exhibiting increases of 1·62 and 2·79 per 1,000 over the rates of the two periods respectively.

146. *Patna.*—In this district the disease affected a lesser percentage of villages amounting to 3·95 per cent.; but the mortality was higher than in 1883 by 1·76 per 1,000 of population, but lower than during the lustrum 1879-83 by ·40 per 1,000, the total percentage of the villages affected being 67·14, and the total mortality 14·73 per 1,000. While present during the whole year, the disease prevailed in severe form from June to November, August being the worst month; in every circle, excepting Patna and Mokamah towns and Fatuha thanna, the death-rates were higher than during the preceding year; and the mortality was severest in the areas indicated in the margin. No explanation has been furnished accounting for the very severe mortality in the Patna thanna or for the high death-rates in the others; but the Assistant Surgeon of the Behar Sub-division observes that "the malarious fever of Bengal has gradually established itself in this part of the country. Enlargement of the spleen with its peculiar cachexia, which was almost unknown in this province, is a common disease now-a-days : neither towns nor villages are exempt from its ravages."

			Ratio per *mille*.
Patna	Thanna	...	51·27
Dinapur	"	...	33·85
Barh	"	...	18·23
Bankipur	"	...	17·11
Attasarai	"	...	17·02
Massauri	"	...	16·90

147. *Gya.*—Here 27·99 per cent. of villages more than in 1883 returned casualties, and the mortality was very much higher, the excess amounting to 6·48 and 8·19 per 1,000 of population in comparison with 1883 and 1879-83 respectively. The most unhealthy months were July to November, August exhibiting the highest mortality and September the next highest. The areas of greatest mortality are those cited in the margin. The local reports do not afford any noteworthy information regarding the incidence of the disease in this district.

			Ratio per *mille*.
Rajauli	Thanna	..	27·95
Burachatti	"	...	24·93
Nowada	"	...	24·71
Gya	"	..	23·75
Sherghatti	"	...	22·24
Aurungabad	"	...	20·04
Gya town		..	19·78
Daudnagar thanna		...	19·72

148. *Shahabad.*—In this district also the extension of the disease was greater and the mortality higher, but not inordinate. The figures are—percentage of villages from which deaths were reported, 75·47 against 71·63 in 1883, and casualty-rate 12·88 per 1,000 of population against 12·66 per 1,000 in 1883, and 10·89 per 1,000 during the lustrum 1879-83. Excepting Mohania, in which the death-rate amounted to 16·79 per 1,000, no other circle in the district presented noticeably high mortality. As usual, the mortality from the

disease was highest during the 3rd and 4th quarters of the year, indicating that it is more fatal in the rainy season and the few months after it, when the moisture is drying up. The small increase in the prevalence and fatality of the disease this year, particularly in the Arrah subdivision, is attributed to the inundation in August from the overflow of the Sone and Ganges, which was much greater than usual. Irrigation is also referred to as causing increase of fever, but this evil is outweighed by the benefits it confers on the people by saving their crops in times of drought.

149. *Mozufferpore*, *Durbhunga* and *Sarun*.—In these districts, although the mortality (in Durbhunga excepted) was higher than during the preceding year, it was not excessive. The smallness of the number of deaths on which the death-rates are founded is no doubt traceable to defective registration. The rates at which deaths were recorded in these districts are 8·79, 8·44, and 9·05 per 1,000 of population respectively. Of these rates, that returned from Sarun was noticeably higher than those of the two preceding periods, viz. 3·15 per 1,000 in excess of 1883 and 3·67 over that of the lustrum 1879-83. The months of prominent suffering were October to December in Mozufferpore, January and November in Durbhanga, and July to September in Sarun. In none of the circles in these districts were the death-rates conspicuously high, excepting in Revilganj town and Darowali thanna in Sarun, where they amounted to 16·48 and 15·44 per 1,000 of population respectively. The reduction of mortality in the Durbhanga district is believed to be due to deficient rainfall and the drier character of the climate. The Civil Surgeon of Sarun continues to believe that the prevalence of fever in his district is ascribable to irrigation and the greater difficulty experienced in draining the country owing to the railway now forming a bund across it."

150. *Chumparun*.—In comparison with the other districts in the Patna Division, a smaller proportion (26·38 per cent.) of the villages reported deaths, and this proportion is also 4·13 per cent. lower than that of 1883; but the fatal results were greater, for the mortality of the year, amounting to 12·54 per 1,000 of population, was in excess of that of 1883 by 1·76 per 1,000 and of that of the lustrum 1879-83 by 5·80 per 1,000. The most unhealthy months were June to December, particularly November, in which month there was a sudden great rise of mortality. This abrupt increase is ascribed to the drying up of the country after the heavy rains (11·09 inches) of September. The severity of the disease was felt most in the Lowrya and Baguha thannas, and in the Bettiah town, which returned death-rates at 21 18, 17·01 and 14·15 per 1,000 of population respectively. Lowrya and Baguha, situated in the north or sub Himalayan portion of the district, are notoriously unhealthy, and suffer severely from fever every year. Although this district is extremely malarious, the Civil Surgeon doubts whether the large number of deaths recorded under the head of fever actually occurred from that malady, as he has observed that, of those who receive medical treatment, whether native or European, very few die of fever—malarious fever being one of those few diseases for which a specific remedy exists.

Incidence of Fever in the Bhagulpore Division.

151. The subjoined table furnishes this information:—

Districts.	Percentage of villages attacked by fever.		Mortality in 1884		Difference in 1884 in death rates as compared with		Unhealthy Months
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille	1883	1879-83.	
East Behar. Monghyr	92 35	57 58 *I*	26,427	13 41	5 11 *I*	3 32 *I*	August to December
East Behar. Bhagulpore ..	85 04	44·35 *I*	32 117	16 34	2 08 *I*	4 18 *I*	April to December.
East Behar. Purneah ..	96 49	35 36 *I*	20,698	16 06	35 *D*	·3 *I*	January to May, November and December
East Behar. Maldah	78 21	66 *D*	11 257	15 94	11 *I*	05 *D*	January to May and October to December
East Behar. Sonthal Pergunnahs	57 47	18 85 *I*	19,220	12 25	1 90 *I*	3 33 *I*	April to December
Total	74 94	28 36 *I*	118,719	14 72	1 93 *I*	2 65 *I*	October to December

The Bhagulpore or East Behar Division suffered more severely than the Patna or West Behar Division. Here 74·94 per cent. of the villages returned casualties against 46·58 per cent. during the preceding year, and the death-rate stood at 14·72 per 1,000 of population in opposition to 12·79 per 1,000 in 1883, and 12·07 per 1,000 during the quinquennium 1879-83, indicating that both the prevalence and severity of the disease were greater. The months of greatest suffering were October to December.

152. *Monghyr.*—In this district 92·35 per cent. of the villages returned fatal cases, being an increase of 57·58 per cent. over last year. There was also an enhancement of mortality of 5·11 per 1,000 as compared with 1883, and of 3·32 per 1,000 as compared with 1879-83. These results have, I believe, been brought about by the attention paid by Major Wilkinson, the Police Superintendent, to the registration of deaths. The unhealthy months were August to December, the worst being October and November. Of the circles in the district those named in the margin suffered most severely. The local reports do not furnish any information of interest relating to the history of fever in this district.

	Ratio per *mille.*
Sheikhpura town	26·01
Jamalpur "	17·17
Kharakpur thana	15·98
Teghra "	15·92
Monghyr "	15·29
Jamalpore	15·17
Surajgurha "	15·07

153. *Bhagulpore.*—In this district also the prevalence and severity of the disease exhibited considerable enhancement. The percentage of villages reporting deaths was 85·64, which is larger than the percentage of 1883 by 44·35, and shows that more than double the number of villages had been affected, and the death-rate amounted to 16·34 per 1,000 of population, which exceeds that of 1883 by 2·06 per 1,000 and that of the lustrum 1879-83 by 4·68 per 1,000. The months of predominating suffering were April to December, November and December exhibiting the largest number of deaths; and in the circles named in the margin the highest mortality occurred. Beyond the statement that the disease prevailed most when the floods were drying up, and that the drinking water in the Soopol thana is bad, there is nothing interesting in the local reports worthy of record.

	Ratio per *mille.*
Banka thana	22·87
Amarpur	21·60
Kumarganj or Sultanganj thana	19·71
Bhagulpur	19·34
Colgong	18·80

154. *Purneah.*—Very nearly the whole of the villages in this district returned casualties, a considerably larger number than in the preceding year, but the death-rate was somewhat lower than that of 1883, although higher than that of the quinquennium 1879-83. The figures are: percentage of villages 96·49 against 61·13 in 1883 and death-rate 16·06 against 16·41 in 1883 and 15·83 during 1879-83. The severity of the disease extended over the months of January to May, and again over November and December, the latter period exhibiting the highest mortality, and the areas of greatest suffering were those marginally cited. It is said that fever is chronic in this district, and that the tendency to splenic and dropsical complication was more marked this year; but that the reduction of mortality is referable to less rain.

	Ratio per *mille.*
Purneah town	28·63
Balrampur thana	21·61
Kishenganj	18·58
Kadwa "	17·42
Kaliaganj	17·38
Manihari "	17·13
Kusba Amour	17·19

155. *Maldah.*—The incidence of the disease in this district this year resulted in decrease in extension associated with increase in mortality, as the percentage of villages attacked by it was 78·21 against 78·87 in the preceding year, and the mortality stood at 15·84 against 15·73 in 1883 and 15·89 during the lustrum 1879-83. The months of greatest suffering were January to May and October to December, the last-named month being the worst. The Maldah and Gazole thanas exhibited the highest mortality, the death-rates returned by them being 21·96 and 20·96 per 1,000 of population respectively. The Magistrate says that the prevalence of the fever is attributable to insufficient inundation, insanitary habits of the people, and want of good drinking water in many places during the hot weather, and the Civil Surgeon adds that the fevers in this district are due chiefly to "climatic influence, malaria being prevalent everywhere."

156. *Sonthal Pergunnahs.*—The fever figures of this district indicate that there was a marked extension in area of disease united to a sensible rise in mortality, thus—percentage of villages returning deaths 57·47 against 38·62 in the preceding year, death-rate 12·25 per 1,000 of population

against 10·95 per 1,000 in 1883 and 8·92 per 1,000 during the lustrum 1879-83. In seasonal incidence the disease exhibited great severity during every month excepting the first three, October returning the largest number of deaths. The greatest suffering was experienced in the Godda and Deoghur thanas, where the mortality stood at 14·57 and 14·47 per 1,000 of population, respectively. The Deputy Commissioner observes that while a succession of dry years has led to a decrease of fever in Rajmehal, there was an increase of the malady in almost the whole of the remainder of the district. He does not think that the prevalence of fevers in this district can be attributed to stagnant water or decaying vegetation, as the country is naturally exceedingly well-drained; but he is inclined to attribute its unhealthiness to two causes, viz. "to the hills, which are distributed here and there with wide valleys and isolated hills in their midst, causing strong currents of air which are constantly increasing or decreasing the temperature suddenly, particularly during the rainy season; and to the clothing of the people not being adapted to the ever-varying temperature." He adds that the water level was excessively low and food scarce and dear, and that the registration of the depth of water in wells, which has been carried on in the district for some years, showed that in the month of October, when the water level should have been highest, it was 50, and, in some cases, 70 to 80 per cent. below the average of previous years. The current opinion is that the fever now prevalent in the district resembles the Burdwan fever, and that a wave of this fever has been travelling northward and spreading with increasing intensity each year.

ORISSA.

Incidence of Fever in the Orissa Division.

157. As usual fever prevailed less extensively and its fatality was less in the Orissa than in the other three divisions of the Province. The number of persons who succumbed to the disease was 26,523 in 47·69 per cent. of the villages and among a population enumerated at 3,628,832, and the death-rate amounted to 7·30 per 1,000 of population. The returns of 1883 show that the death-rate was 6·79 per 1,000 in 39·94 per cent. of the villages; and those of the lustrum 1879-83 give the casualty-rate at 7·10 per 1,000 in 51·09 per cent. of the villages. A comparison of these figures yields the results indicated in the margin. In seasonal incidence, January with a rainfall of ·14 inches exhibited much suffering, the death-rate amounting to ·77 per 1,000 of population. October with 6·34 inches returned an almost equal death-rate (·72 per 1,000); and in November and December, during which the mortality was highest (the casualty rates being ·84 and ·91 per 1,000 respectively), there fell only ·29 inches of rain. The death-rates during all the remaining months, while lower, were almost equally uniform, ranging from ·43 to ·56 per 1,000. The rainfall during this period amounted to 49·50 inches.

	Increase or decrease in 1884 as compared with 1883.	1879-83.
Percentage of Villages affected...	7·75 *I*	3·40 *D*
Ratio of Deaths per 1,000 of population	·51 *I*	·20 *I*

Incidence of fever in Cuttack, Poori and Balasore.

158. *Cuttack*, *Poori*, *Balasore*.—The fever statistics of these districts present no noticeable peculiarity requiring that those appertaining to each district should be separately considered: so they are submitted collectively in the subjoined table:—

District.	Percentage of Villages attacked by Fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per *mille*.	1883.	1879-83.	
Cuttack	57·64	21·09 *I*	15,984	8·89	1·76 *I*	·94 *I*	January and October to December.
Poori	29·59	16·53 *D*	2,612	2·93	2·07 *D*	2·64 *D*	Ditto ditto.
Balasore	48·53	6·66 *I*	7,947	8·41	·56 *I*	1·50 *I*	Ditto ditto.

The figures of 1884, taken in connection with those of the two periods with which comparison is instituted, indicate that while in Cuttack and Balasore both the extension and fatality of the disease were greater, in Poori they were lower; and that, relatively, Cuttack suffered the most, Balasore in the next degree, and Poori the least. The most unhealthy months were the same in all the three districts, viz. January and October to December; and while the mortality was sensibly high in no circle in Balasore, the highest death-rates were furnished from Poori town (8·11 per 1,000 of population) in the Poori district, and from the Aul (14·23 per 1,000), Dharmsala (13·30 per 1,000), Patamundi (9·56 per 1,000), Salipur (9·43 per 1,000), and Kendrapara (9·08 per 1,000) thannas in Cuttack. The sanitary reports from *Cuttack*, which suffered the most, furnish no information possessing any interest for reproduction here. In *Poori* the slight decline of mortality in December occurred, it is said, immediately after a partial inundation in the Gope, Pipli, Poori and Khurda thannas. The Magistrate, Mr. Barrow, notes that the people in *Balasore* being deficient in stamina owing to their living being too low both in quantity and quality, easily become a prey to fever whenever it is seriously prevalent. His account of the sanitation of the Orissa villages will be found interesting. He says that they " bear a favourable contrast to those in Bengal and Behar. The villages are generally small and the houses are scattered with numerous open fields between them, so they are not crowded together, nor have they heaps of filth in the lanes and waste places like those in Behar, nor are they thickly hidden by luxuriant growths of bamboos and low jungle, while all the neighbourhood is damp and reeking with exhalations from the numerous pits, holes and drains where all the drainage collects and lodges, as in Bengal Proper and Eastern Bengal. The soil too about here is drier, and has a frequent intermixture of sand, which appears to keep the place cleaner." It was observed by the then Magistrate, Mr. Grant, in his sanitary report for 1883, that epidemic malarious fever was spreading from Midnapore into the northern thanas of Balasore. I went to the district prepared to make inquiries into this matter, and if necessary to visit the affected thanas. From information placed before me by the Civil Surgeon, I find that the death-rate from fever in thanas Jellasore, Bustah and Baliapal adjoining Midnapore was by no means excessive, in fact did not nearly reach the rates of many districts in Bengal even by one-half, and that Chandballi thana in the south of the district suffered more from fever than Bustah in the north. The Civil Surgeon is of my opinion that no serious invasion of epidemic fever has as yet visited the Balasore district. The disease also affected the Midnapore district with diminished severity generally in 1884, but exhibited a tendency to linger in the southern thanas, where the mortuary ratios from this cause, by no means excessive, are slightly higher than in 1883, and the Civil Surgeon of Midnapore fears that in case another epidemic visitation should occur, the district will suffer right down to the sea coast. Should this occur, it is not unlikely that the northern thanas of Balasore may become involved.

CHOTA NAGPORE.

Incidence of Fever in Chota Nagpore.

159. Next to Orissa the suffering from fever was least in this Division of the Province, but the disease was more prevalent and the mortality higher in comparison with preceding periods, as the following figures show. 53,485 deaths were reported to have occurred in 1884 in 58·90 per cent. of the villages among a population numbering 4,334,178, the proportionate death-rate being 12·34 per 1,000. In 1883 the death-rate was 11·83 per 1,000 in 51·62 per cent. of the villages and during the lustrum 1879-83, 10·89 per 1,000 in 56 per cent. of the villages. The seasonal incidence of the disease did not differ from that in 1883. It prevailed with subdued severity during the first three months of the year. In April there was a great rise in mortality which was followed by three months of abated suffering. In August the disease resumed activity and reached maximum intensity in September. In October the suffering was somewhat lower than in September, but in November and December it declined markedly.

Incidence of Fever in Hazaribagh, Lohardugga, Singbhum and Manbhum.

160. The statistics illustrating the prevalence and fatality of fever in the four districts which compose Chota Nagpore are presented in the following table :—

Districts.	Percentage of villages attacked by fever.		Mortality in 1884.		Difference in 1884 in death-rates as compared with—		Unhealthy Months.
	In 1884.	Excess or deficit as compared with 1883.	Deaths.	Ratio per mille.	1883.	1879-83.	
Hazaribagh	66·97	·23 *D*	18,189	16·48	2·73 *I*	5·06 *I*	April to November.
Lohardugga	57·20	9·93 *I*	18,251	11·34	1·24 *D*	1·21 *D*	August to November.
Singbhum	67·81	5·07 *I*	6,313	11·23	1·28 *I*	1·51 *I*	April and September.
Manbhum ...	59·27	1·01 *I*	10,730	10·13	·13 *I*	1·38 *I*	April to November.

These figures indicate—(1) That more than half but less than three-fourths of the villages in all four districts were pervaded by the disease. (2) That compared with 1883, deaths were reported from a larger number of villages in all the districts, excepting Hazaribagh. (3) That the mortality was highest in Hazaribagh, next highest, but almost equal, in Lohardugga and Singbhum, and least in Manbhum. (4) That in comparison with the incidence of the disease in 1883 and during the lustrum 1879-83, there was a diminution of mortality in Lohardugga, but an increase in Hazaribagh, Singbhum and Manbhum. The seasonal incidence of the disease is exhibited in the above table, the prominent feature being that the three earlier and the last month, of the year were the healthiest in all the districts in question. April, May and June, were, however, also months of much freedom from the disease in Lohardugga. In the undermentioned circles of these districts, the disease prevailed with the most marked fatality :—

In Hazaribagh.	Ratio per *mille.*	*In Lohardugga.*	Ratio per *mille.*	*In Singbhum.*	Ratio per *mille.*	*In Manbhum.*	Ratio per *mille.*
Tandowa thanna ...	22·49	Manka thanna ...	19·61	Chaibassa town	16·81	Tooudi thanna	16·77
Hazaribagh ,, ..	21·97	Barasara ,, ...	19·09			Purulia town	16·01
Huntergunge ,, ...	21·66	Daltongunge ,, ...	17·21				
Chatra ,, ...	21·05	Garwa ,, ..	16·85				
Simooria ,, ...	20·33						
Kodarma ,, ..	19·15						

In *Singbhum* the prevalence of the disease was attributed to malaria, the country having much dense jungle. The Civil Surgeon notes that, if this cause were removed, the district will be one of the healthiest, for local causes, which contribute largely in promoting diseases in large towns and densely populated places, are absent in Singbhum. *Manbhum.*—A few cases of continued fever of distinct typhoid form were observed by the Civil Surgeon in the dispensary in the town of Purulia. Nothing special with reference to the prevalence of the disease was reported from *Hazaribagh* and *Lohardugga.*

Incidence of Fever among European Seamen.

161. *Port of Calcutta.*—The subjoined table furnishes the figures illustrating the prevalence and fatality of fevers among *European Seamen* in the Port of Calcutta during the year under review in comparison with the preceding year :—

	Admissions to hospital.		Deaths.		Ratio per *mille.*	
	1884.	1883.	1884.	1883.	1884.	1883.
Fever, Enteric	7	...	5	...	2·96	...
,, Malarious	158	323	2	4	1·18	2·15
,, Simple	297	114	...	...	...	...

indicating that enteric fever was very fatal this year; that the mortality from malarious fever had diminished sensibly in comparison with its incidence in 1883—in fact it was the lowest since 1878; and that, as usual, there were no casualties from simple fever. The Health Officer reports that 1883 was the

only year in which enteric fever was absent from the shipping, and that of the five fatal cases of this year, three were only 4 days, 2 days and 1 day, respectively, in Port before admission into hospital, having been ill on arrival, the inference being that enteric fever may be contracted at sea.

Incidence of Fever among Native Floating Population.

162. Among the *Native Floating Population* 5 deaths against 8 in 1883 from malarious fever, and 10 deaths against 14 from simple fever were recorded, the death-rate from the former disease being ·19 per 1,000 of population against ·31 per 1,000, and from the latter ·39 per 1,000 against ·55 per 1,000, indicating that the boatmen were less affected by these maladies in 1884 than during the preceding year, so far as their existence could be ascertained.

BOWEL-COMPLAINTS.

Extent of prevalence and fatality of Bowel-complaints.

163. During 1884, 58,376 deaths were reported to have occurred from bowel-complaints, the death-rate in proportion to population being ·88 per 1,000 against 55,270 deaths or at ·83 per 1,000 of population in 1883 and ·82 per 1,000 during the lustrum 1879-83. Deaths were returned from 10·61 per cent. of the villages against 9·32 per cent. in 1883. In 13 against 11 of the registering circles in the Province the maladies above alluded to prevailed with some severity, while they were absent from 21 against 18, and the remaining 615 circles against 619 exhibited no abnormal severity. These figures indicate that the disease in question pervaded a more wide-spread area, and that the mortality was at the same time somewhat greater. But, as before reported, the mortality from this class of diseases is generally under-estimated, as is abundantly proved by the jail statistics, in which, although great attention is paid to diet and to the other known causes which promote and foster the diseases, they prevail to a large extent.

Comparative prevalence of Bowel-complaints in the Urban and Rural circles

164. Of the total casualties of the year, 7,984 or at 3·24 per 1,000 of population were returned by the urban circles and 50,392, or at ·79 per 1,000 from the rural circles against 3·54 and ·73 per 1,000 in 1883 respectively, indicating that while there was a diminution of mortality in the urban circles, the rural circles exhibited enhancement—another proof that the mortuary records of the latter circles are improving.

Areas which suffered most from Bowel-complaints.

165. The districts, towns and rural circles which returned the highest death-rates from bowel-complaints are mentioned below:—

DISTRICTS.	Ratio per *mille.*	TOWNS.	Ratio per *mille.*	RURAL CIRCLES.	Ratio per *mille.*
Balasore	5·21	Revilgunge	8·72	Patna	27·17
Howrah	4·01	Bhagulpore	7·37	Basta in Balasore ...	11·08
Poori	3·02	Raniguuge	6·67	Dinapur in Patna ...	10·00
Patna	2·34	Durbhanga	6·47	Dighwara in Sarun ...	6·62
Cuttack	2·25	Balasore	6·36	Balasore	6·54
Darjiling	2·23	Suburbs of Calcutta	6·32	Basudevpur in Balasore	6·40
		Midnapore	6·22	Srinagur in Dacca ...	5·54
		Serampore	5·77	Bhadrak in Balasore	5·38
		Hughli	5·73	Silao in Patna ...	5·23
		Barrh	5·04	Suttahatta in Midnapore	4·97
		North Suburban town	5·00	Baynan in Howrah ...	4·90
		Monghyr	5·00	Shampur in do. ...	4·87
				Seraikela in Singbhoom	4·80

Seasonal incidence of Bowel-complaints.

	Number of deaths.		Number of deaths.
December	5,788	October	4,848
November	5.706	March	4,634
May	5,050	September ...	4,590
August	5,039	July	4,525
April	5,000	June	4,349
January	4,865	February	3,982

166. This information is supplied by the marginal figures, which show that December and November are the worst months, but with regard to the rest of the year the mortality in hot, rainy and cold months follows no rule, indicating very defective registration.

167. The marginal figures furnish this information in comparison with that for the preceding year. These figures demonstrate with regard to the *European Seamen* that less diarrhœa and dysentery prevailed among them than during 1883—in fact since 1878; that the former malady proved fatal during 1884 to the extent of 1·78 per 1,000 of population against no casualties in the preceding year; and that the latter was sensibly less severe—and with regard to the *Native Floating Population* that the prevalence of diarrhœa among them was not attended with fatal results, and that the mortality from dysentery was inconsiderable.

Diarrhœa and Dysentry in the Port of Calcutta.

	Admission to hospital.		Deaths.		Ratio per mille.	
	1884.	1883.	1884.	1883.	1884.	1883.
European Seamen.						
Diarrhœa ...	125	164	3	...	1·78	...
Dysentery ...	80	90	2	4	1·18	2·15
Native Floating Population.						
Diarrhœa ...	......	...	...	2	...	·07
Dysentery ...	......	...	2	12	·07	·47

INJURY.

168. Twenty-four thousand six hundred and seventy-four casualties, or at the rate of ·37 per 1,000 of population, are reported to have been caused by violence, against 23,670, or in the proportion of ·35 per 1,000 in the preceding year, indicating that there was a small increase of mortality from this death cause. To this mortality the urban circles contributed 1,105 deaths, or at ·44 per 1,000 of population, and the rural circles 23,569, or at ·36 per 1,000.

Mortality from Injury.

169. The marginal table, in which the aggregate mortality from injury has been distributed into the different heads under which it was returned, compared with the similar information for the lustrum 1879-83, again maintains the facts that, as a rule, the largest proportion of deaths is caused by snakes and wild beasts; that accidents rank second in degree of mortality; suicides third; that wounds cause the least number of deaths; and that women are more prone to suicide than men.

Mortality from different classes of Injury.

	Suicide.				Wounds.		Accident.		Snake bites and killed by wild beasts.	
	Deaths.			Ratio per cent. to total deaths from Injury.						
	Male.	Female.	Total.		Deaths.	Ratios.	Deaths.	Ratios.	Deaths.	Ratios.
In 1884 ...	1,040	1,572	2,612	10·58	1,591	6·44	10,078	40·84	10,893	42·12
" 1879-83 ...	927	1,492	2,419	10·88	1,299	5·84	8,727	39·27	9,776	43·99

170. In seasonal incidence of casualties from violence, the law of former years is again maintained, viz. that the greatest loss of life from this cause occurred during the rainy months from June to September, as during these four months 13,782 deaths, or over 55 per cent. of the total casualties returned under the head of injury, were recorded. The reason for this has been furnished in the Reports of former years.

Seasonal incidence of Deaths from Violence.

171. *Port of Calcutta.*—Of the *European Seamen* in Port, 21 met their deaths from drowning, being at the rate of 12·47 per 1,000 of the Port population.

Mortality from Accident in the Port of Calcutta.

OTHER DISEASES.

172. From maladies which have not been considered in the foregoing portion of this Report, and which are classed under the head of "Other Causes," there were recorded 176,373 deaths, or in the proportion of 2·66 per 1,000 of population, against 152,817 casualties, or at the rate of 2·30 per 1,000 in the preceding year,

Mortality from Other Diseases.

showing an increase of 23,556 deaths. The areas in which these diseases prevailed with the greatest severity are named below :—

DISTRICTS.	Ratio per mille.
Poori	12·81
Sarun	8·81
Backergunge ...	6·65
Balasore	6·02
Cuttack	5·14
Patna	4·62
Birbhum	4·56
Dacca ...	4·22
Howrah	4·02

TOWNS.	Ratio per mille.
Poori	18·60
Dacca	13·29
Suburbs of Calcutta ...	12·51
Gya	12·21
Sewan	12·17
Bankura	10·66
Kendrapara ...	10·63
Bhagulpore ...	10·51
Behar	9·25
Kishoregunge ..	8·83
Utterpara	8·34
Hughli	7·71
Bishenpore	7·65
Cuttack	7·65
Midnapore	7·60
Kishnaghur ...	7·56
Balasore	7·35
Seetamurhee ...	7·34
Darjiling	7·02
Jajpur	6·85
Naraingunge ...	6·84
Serampore	6·68
Burdwan	6·66
Howrah	6·43
Jamalpore	6·19
Arrah	6·11
Sonamukhi	6·02
Soory	5·98

RURAL CIRCLES.	Ratio per mille.
Patna ...	34·90
Bhanpur in Poori ...	23·26
Khoorda in Poori ...	15·68
Chupra in Sarun ...	12·30
Karimpur in Nuddea ...	11·94
Buragaon in Sarun ...	11·83
Gopalgunj in do. ...	11·23
Banki in Cuttack ...	10·82
Matbari in Backergunge	10·60
Pipli in Poori ...	10·57
Poori	10·37
Gulachipa in Backergunge	10·04
Dinapore in Patna ...	10·00
Govindganj in Chumparun	9·94
Perozepur in Backergunge	9·63
Dinagepore	9·59
Darowli in Sarun ...	9·15
Bauphal in Backergunge	9·06
Gope in Poori ...	8·82
Basuntpur in Sarun ...	8·72
Dighwara in do. ...	8·38
Aul in Cuttack ...	8·28
Bhandaria in Backergunge	8·16
Dhamnagar in Balasore...	8·16
Manghi in Sarun ...	8·00
Jhalokati in Backergunge	7·96
Porsha in Sarun ...	7·89
Tehatta in Nuddea ...	7·85
Jagganathdighi in Tipperah	7·77
Sakulipur in Birbhum ...	7·67
Patuakhali in Backergunge	7·53
Nalchiti in do. ...	7·47
Naraingunge in Dacca ...	7·31
Sarupkati in Backergunge	7·31
Tirtol in Cuttack ...	7·19
Sewan in Sarun ...	7·15
Mokamah in Patna ...	7·05
Kessaria in Champarun...	6·94
Basta in Balasore ...	6·92

Mortality from Heat Apoplexy or Sunstroke in the Port of Calcutta.

173. *Port of Calcutta.*—The admissions of *European Seamen* into hospital for this malady were more numerous during the year under review than during the preceding three years, viz. 13 against 9, 5, and 4 in 1881, 1882 and 1883 respectively. Of these 13 cases, only 1 proved fatal ; but 2 deaths occurred on boardship before the subjects could be removed to hospital. Thus there were in all 15 cases with 3 casualties or at the rate of 1·78 per 1,000 of the Port population. Among the *Native Floating Population* there was no mortality from this cause, but one case was admitted into hospital and recovered.

Mortality from Scurvy.

174. Twenty-four *European Seamen* were admitted into hospital for scurvy against 14 in the preceding year. Of this number only 1 died against no casualties in 1883. Seventeen of these cases were brought in six vessels from one port alone—New York. The attention of the Shipping Master was directed to the frequency of scurvy in vessels arriving from this port. This Officer held an enquiry regarding an outbreak of scurvy in a vessel which arrived after a few months' journey. The result was that the provisions and lime-juice appeared to have been provided according to regulation, but that the quantity of lime-juice had been issued by guess, as neither the master nor the steward knew the quantity of juice contained in the imperial quart bottles. No scurvy was reported to have existed among the *Native Floating Population.*

Mortality from "Other diseases."

	In 1884.	In 1883.
Number admitted into hospital	1,248	1,169
Deaths	26	33
Ratio of deaths per 1,000 of population	15·43	17·74

175. The admissions into hospital of *European Seamen* from the maladies classed under the head of "other diseases" were in excess of the number in 1883, but the mortality was less, as will be apparent from the marginal figures. Of the 26 casualties, 7 occurred from phthisis, 5 from bronchitis or pneumonia, 3 from liver diseases, 2 from brain disease, 1 from anœmia, 1 from hæmatemesis, 1 from eye disease, and 6 were accidental deaths. The mortality among the *Native Floating Population* from the diseases grouped under the head of "other causes" was also greater. The casualties amounted to 37 or at 1·45 per 1,000 of population against 24, or at ·94 per 1,000 in the preceding year.

SECTION VII.

GENERAL HISTORY OF VACCINATION.

Year of Report.

176. The history of vaccination discussed in this Section of the Report is for the official year 1884-85.

Officers in charge of the Vaccination Circles during the year.

177. This information is submitted below:—

Calcutta.—Surgeon-Major K. McLeod from 1st to 30th April 1884, and Surgeon-Major J. O'Brien from 1st May 1884 to the end of the year.

Metropolitan Circles.—Surgeon-Major Kally Poddo Gupta from 1st April to 19th May 1884, and Dr. Kristo Dhone Ghose from 25th July 1884 to the end of the year. During the interval Assistant Surgeon Jadub Chunder Ghose, Rai Bahadoor, the Senior Deputy Superintendent, officiated.

Darjiling Circle.—Surgeon-Major J. J. Wood throughout the year.

Ranchi Circle.—Surgeon W. Owen throughout the year, excepting for two months and 28 days (25th May to 11th August 1884), when he was on privilege leave, and during which time Dr. Wilson, the Civil Surgeon of Ranchi, and Dr. Leahy, of the 17th Bengal Native Infantry, officiated.

Sonthal Pergunnahs Circle.—Dr. R. A. Barker from 1st April to 15th May 1884, and Assistant Surgeon Kally Prosonno Ghosal from 16th May 1884 to the end of the year.

Eastern Bengal Circle.—Apothecary A. Lyons throughout the year.

Behar Circle.—Assistant Surgeon Mothura Nath Sen throughout the year.

Orissa Circle.—Assistant Apothecary P. Veariah Naidu throughout the year.

178. *Strength of the Working Establishment.*

CIRCLES.	1884-85. Superintendents.	Deputy Superintendents.	Inspectors and Native Superintendents.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.	1883-84. Superintendents.	Deputy Superintendents.	Inspectors and Native Superintendents.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.
Calcutta ...	1	2	...	3	19	...	...	1	1	...	3	11	...	...
Metropolitan Circles ...	1	4	39	..	..	..	343	1	4	39		..	...	342
Suburbs of Calcutta ...	...	1	..	3	12	...		.	1	.	3	10	..	...
Bovine Vaccination Department, Calcutta	...	1	1	...	3		..	...	1	...	..	4	..	..
TOTAL OF METROPOLITAN CIRCLES ...	1	6	40	3	15		343	1	6	39	3	14	...	342
Darjiling Circle ...	1	2	11	1	6		171	1	2	11	1	5	...	184
Ranchi Circle ...	1	1	14	...	31	...	170	1	1	6	1	39	..	183
Sonthal Pergunnahs Circle ...	1	.	10	3	59	..	83	1	1	10	3	59	.	59
Eastern Bengal Circle ...	1	1	6	6	76	39	214	1	1	4	6	77	37	184
Orissa Circle ...	1	..	...	3	26	4	..	1	...	..	3	26	3	..
Behar Circle ...	1	.	4	4	44	13	83	1	...	2	4	41	17	..
TOTAL OF VACCINATION CIRCLES ...	8	12	85	23	276	56	1,067	8	12	72	24	272	57	953
Municipalities, Dispensaries, &c. ...	...	...	...	...	213	...	27	...	..	.	...	224	...	...
GRAND TOTAL ...	8	12	85	23	489	56	1,094	8	12	72	24	496	57	952

The most important of the modifications of the working Establishment which took place this year was the appointment of a separate Superintendent for the Sonthal Pergunnahs Circle. Hitherto this Circle was in charge of the Civil Surgeon of the Sonthal Pergunnahs district, who, being tied down to his Sudder Station and District work, could not discharge the most important of the duties required from the Superintendent of a Vaccination Circle, viz.,

the supervision and inspection of the work of his subordinates. This desideratum has now been supplied. The other changes disclosed in the above statement are that while, on the whole, on the one hand there was an increase of establishment of one Assistant Superintendent, 13 Inspectors and 142 Licensed Vaccinators, on the other hand a reduction took place of one Deputy Superintendent, one Head Vaccinator and 7 paid Vaccinators. Details of the changes in relation to each circle are exhibited in the margin, and the explanations of the causes which necessitated them are subjoined.

Circles.	Deputy Superintendents.		Inspectors and Native Superintendents.		Head Vaccinators.		Vaccinators.		Licensed Vaccinators.	
	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Calcutta	1*	...	...	...	...	...	8	...	...	...
Metropolitan Circles	...	...	...	...	...	...	...	...	1	...
Bovine Vaccination Department, Calcutta	...	...	1	...	...	...	..	1	...	...
Suburbs of Calcutta ..	...	...	...	.	.	.	2	..	...	..
Darjiling Circle ..	...	...	...	...	...	...	1	.	...	10
Ranchi Circle ...	...	...	8	...	...	1	...	8	...	13
Sonthal Pergunnahs Circle . .	...	1	..	...	...	...	...	.	21	..
Eastern Bengal Circle	..	...	2	.	...	..	..	1	30	...
Behar Circle	...	..	2	...	...	...	3	.	83	..
Municipality	...	...	...	...	.	...	...	11	27	.
Total ...	1	1	13	..	.	1	14	21	165	23
Net increase or decrease	......		13 *I*		1 *D*		7 *D*		142 *I*	

* Assistant Superintendent.

Calcutta.—On the recommendation of a special Committee appointed by the Corporation to report upon the working of the Compulsory Vaccination Act, an additional permanent Establishment, consisting of one Assistant Superintendent, seven male Vaccinators, and one female Vaccinator, the latter to be allowed Rs. 25 with Rs. 10 for conveyance hire per mensem, was appointed in order that vaccination may be carried on throughout the year. *Bovine Vaccination Department, Calcutta.*—The post of one of the Vaccinators was abolished, and that of an Inspector created, under the arrangements sanctioned by Government for rendering the Bovine Vaccination Scheme a permanent measure. *Suburbs of Calcutta.*—Ten Vaccinators for the 14 vaccine depôts having been found to be insufficient, two additional Vaccinators were, on the recommendation of Dr. Ghose, the Officiating Superintendent of Vaccination, Metropolitan Circles, who supervises the vaccination in the Suburbs, were appointed. Further strengthening and revision of the establishment of this Municipality are indicated for reasons which will be furnished when reporting on the working of the Compulsory Vaccination Act in it. *Darjiling Circle.*—One additional Vaccinator was sanctioned by Government for working on the Hills, with the view of protecting the station of Darjiling from small-pox introduced from the Plains. This Vaccinator is employed during eight months of the year. *Ranchi Circle.*—There was no actual increase or decrease of Establishment, but as eight of the Vaccinators were deputed to do duty, two as Native Superintendents and six as Inspectors, they have been shown under the superior service heads. This arrangement also accounts for the reduction seen under the head of Vaccinators. With regard to the Head Vaccinator, the post fell vacant, and was not filled up. *Sonthal Pergunnahs Circle.*—A separate Superintendent having been appointed, it was deemed inexpedient to retain the Deputy Superintendent, and his services were therefore dispensed with. *Eastern Bengal Circle.*—It having been arranged to extend the Licensed Vaccination System in the Mymensing district, two additional Inspectors were appointed under orders of Government to supervise the work of the Licensed Vaccinators in that district. This arrangement necessitated the entertainment of 30 additional Licensed Vaccinators. The reduction of one paid Vaccinator has not been accounted for. *Behar Circle.*—In this Circle also it was arranged to extend the Licensed Vaccination System to the Patna district, and two additional Inspectors were appointed for the same purpose as in the Eastern Bengal Circle, 83 licensed vaccinators being placed under them. There was no actual increase of paid Vaccinators. The three additional men shown in the table belong to the sanctioned Establishment; they were retained during this, but not during the preceding year.

With reference to the increase and decrease of Licensed Vaccinators shown in the above table, it should be stated that their strength fluctuates according to the requirements of each year.

179. *Municipal Area.*—The above table shows that the services of Licensed Vaccinators are beginning to be utilized in this area, as 27 of these men were employed in some of the Municipalities.* I should consider the scheme by which vaccination is rendered self-supporting in Municipalities a move in the right direction; but the Civil Surgeon of Chaibassa (one of the Municipalities in which a licensed vaccinator was employed) does not consider the arrangement a satisfactory one, because the vaccinator can do as he likes, work or not work, and because the fees charged fall heavily on families with a large number of children. He advocates free vaccination for the poorer classes, who can then have no excuse for objecting to have their children vaccinated.

	Number.		Number.
* Takee in 24-Pergunnahs ...	1	Gajrah in Tipperah ...	1
Nattore in Rajshahye .	1	Tangail in Mymensing ...	1
Serajgunge in Pubna ...	2	Sherpore in do. ...	1
Julpaiguri ...	1	Behar ...	2
Narayangunge in Dacca ...	1	Rajmehal ...	1
Manickgunge in do ...	1	Chatra in Hazaribagh ...	1
Madaripore in Faridpur ...	3	Daltongunge in Lohardugga ...	1
Jalakati in Backergunge ...	1	Garwa in do. ...	1
Nulchiti in do. ..	1	Chaibassa ..	1
Bauphal in do. ...	1	Raghunathpore in Manbhum ...	1
Backergunge ...	1		
Kishorgunge in Mymensing	1		
Jamalpore in do. ...	1		

180. A brief account of those of the Vaccination Establishment who were favourably mentioned in the reports, and of those who were punished for grave misconduct, is subjoined. The conduct of the rest of the Establishment, excluding also those who were found guilty of ordinary offences, was, on the whole, good.

Conduct of Establishment.

Calcutta.—The Superintendent of this Circle reports that "the conduct of the Deputy Superintendent [Assistant Surgeon Ram Chunder Mitter] was highly satisfactory. He carried out his duties with energy and discretion. I have found his knowledge of the town, and of the various classes of people who inhabit it, most useful in all questions relating to vaccination and the working of the Compulsory Vaccination Act." The Superintendent also gives much credit to Civil Hospital Assistant Amrito Lal Roy, the newly-appointed Assistant Superintendent, for intelligence and hard work, and for ably assisting the Deputy Superintendent in carrying out his multifarious duties. Head vaccinator, Juggodish Chuckeravarti, has also been commended for performing his duties satisfactorily, and keeping his books in excellent order. *Metropolitan Circles.*—The Officiating Superintendent, Dr. Ghose, reports that Assistant Surgeon, Jadub Chunder Ghose, Rai Bahadoor, Deputy Superintendent, is "an officer of experience, who worked with his usual method and completeness. He commanded the respect of the men under him, and his inspection was thorough;" that Assistant Surgeon, Jogendro Nath Bhuttacharjee, formerly in charge of Bovine Vaccination in Calcutta, and at present working in the same capacity, and as Deputy Superintendent of Vaccination in the Suburban and Howrah Municipalities, "worked with untiring zeal and devotion," and that he is an officer possessing special aptitude for the department, and deserving of special notice by the Sanitary Commissioner; and that the head clerk, Babu Gopal Chunder Mazoomdar, "who has been 17 years in the service, is a man of great merit, and in fact the only clerk in the office who can write and understand English and the office work." Two inspectors were dismissed for negligence and gross misconduct, and the 10 vaccinators in the Suburban Municipality were found by Dr. Ghose, on his assuming charge of his office, to be working entirely in their own way, seldom attending the depôts, vaccinating children as they come across them, charging fees, but rarely crediting them to the municipal funds, ignorant of the rules and requirements of the Compulsory Vaccination Act, and such an apathetic and dishonest lot that as soon as the Superintendent insisted on their performing their duties properly, and vaccinating the people free of charge, six of their number either resigned or had to be removed for persistently obstructing work. In the *Ranchi Circle* the Superintendent has had, as in former years, to contend with almost insurmountable difficulties in progressing with vaccination, owing to gross misconduct on the part of a large number of his subordinates from the clerk downwards. When he assumed charge, the circle was in a disorganized condition, all discipline being conspicuous by its absence. Since then the same story of inefficiency, neglect of duty, disobedience of orders, impeding of work, irregularities in the matter of fees, quarrels, assaults, &c., with their train of punishments, such as warnings, suspensions, dismissals, is repeated yearly, good conduct on the part of any of

the establishment being rare. Moreover, this year, an entire party of vaccinators resigned, because the Superintendent did not himself take notice of an assault alleged to have been committed by a chowkidar on one of their number, but referred them to the Criminal Court for redress, the fact being that the chowkidar himself was assaulted by one of them. This continued struggle is, besides being irksome in the extreme, a great bar to the progress of work, and it is only due to Dr. Owen being always among his men, controlling them with a strong hand, and exercising great tact, that vaccination has not fallen through in the Ranchi Circle. In the *Eastern Bengal* Circle Native Superintendent Dinabundhu Roy, having received three dozens of lancets, returned only two dozens into store, stoutly maintaining, even in the face of his own receipt acknowledging the entire number, that he had received only two dozens. He, moreover, having received Rs. 9-9 from some vaccinators for lancets lost by them, credited only Rs. 5-4 and retained the difference, representing excess payment above the value of the lancets. He was dismissed after the price of the unreturned lancets had been recovered from him, and he had been directed to refund the excess payments to the vaccinators. In the *Orissa* Circle head vaccinator Amos Mohanty is said to understand his work thoroughly, and to have given satisfaction, his services being much appreciated by the Madhupur Rajah and other zemindars "owing to his kind way of handling and vaccinating people in the villages," and head vaccinator Ram Lall Dey is reported to be a hard working man and active in his movements, being a good walker.

I am not quite satisfied with the work of some of the Superintendents and most of the Deputy Superintendents in the department. My reasons for dissatisfaction will be furnished in a subsequent portion of this Report. I have already spoken of the good work performed by Dr. Owen, the Superintendent of the Ranchi Circle, and it gives me great pleasure to record here that the manner in which Dr. Ghose, who officiated during the year as Deputy Sanitary Commissioner and Superintendent of Vaccination, Metropolitan Circles, discharged his duties is beyond all praise. He is a most energetic, conscientious, and careful officer of high administrative ability, the loss of whose services in the Sanitary Department is much to be regretted.

Areas vaccinated, and Plans which determined the conduct of Operations.

181. A summary of the information required under this head is subjoined.

182. *Calcutta.*—The subject of vaccination attracted much public attention during the year under review, and a special Committee was appointed by the Corporation to report upon the working of the Compulsory Vaccination Act. On the recommendation of this Committee a permanent establishment was appointed to push on and maintain vaccination throughout the year, to arrest the progress of an unusual prevalence of small-pox which was present in the hot weather, and to forestall the possibility of a severer outbreak in the cold weather. In other respect the work was carried on in the manner reported in former years.

183. *Metropolitan Circles.*—In this Circle the unit of work is the area of an Inspector's jurisdiction, of which there are 39, and several of these jurisdictions are amalgamated to form a Circle, of which there are four—thus: the first Circle consists of 10 Inspectors' jurisdictions, comprising 45 thanahs; the second Circle, 11 Inspectors' divisions, containing 55 thanahs; the third Circle has 12 Inspectors' divisions with 48 thanahs; and the fourth Circle, six Inspectors' divisions, comprising 35 thanahs. The four Circles contain the 183 thanahs in the 11 districts of the Burdwan and Presidency Divisions, and each Circle is under the superintendence of a Deputy Superintendent, and the operations are conducted by Licensed Vaccinators, of whom there were 343 in 1884-85. It will thus be seen that the work is systematically and judiciously distributed over the entire area, which goes by the name of the "Metropolitan Circles." During the year under review vaccinations were carried on in every thanah, excepting a few, which were considered to have been completely protected during the preceding year. Again, in some thanahs in Burdwan, Birbhum, Murshidabad, and Bankura, work was abandoned as soon as it was commenced, owing to scarcity of food in them caused by failure of crops. In the subjoined table are shown in detail the working areas, the staff employed, and the amount of work produced during the year under notice, as compared with the results of the preceding year:—

Circles.	Deputy Superintendent in charge of the Circles.	Districts.	Number of inspectors, 1884-85.	Number of licensed vaccinators, 1884-85.	Number of operations performed. 1884-85.	1883-84.	Difference.
1st Circle ...	Assistant Surgeon Neem Chand Gupta	Khulna	2	20	39,530	29,580	9,970 *I*
		Jessore	5	44	50,783	39,073	11,710 *I*
		Part of 24-Pergunnahs ...	2	11	23,552	17,429	6,123 *I*
		Total ...	10	81	113,885	86,082	27,803 *I*
2nd Circle ...	Assistant Surgeon Kassi Chunder Dutt	Nuddea	5	38	45,874	50,596	4,742 *D*
		Murshidabad	4	31	34,010	46,061	12,051 *D*
		Birbhum	2	19	12,466	15,583	3,116 *D*
		Total ...	11	88	92,330	112,839	20,509 *D*
3rd Circle ...	Assistant Surgeon Jadub Chunder Ghose	Part of 24-Pergunnahs ..	3	17	22,197	19,839	2,658 *I*
		Howrah	2	12	15,576	17,009	2,033 *D*
		Hughli	3	12	21,649	19,353	2,296 *I*
		Burdwan	4	16	28,056	34,308	6,252 *D*
		Total ...	12	57	87,778	91,109	3,331 *D*
4th Circle ...	Assistant Surgeon Mohendro Lall Bose from 1st April 1884 to 17th February 1885, and Assistant Surgeon Preumber Nath Mitter from 18th February to 31st March 1885	Midnapur	4	60	51,263	31,648	19,615 *I*
		Bankura	2	57	20,883	20,865	18 *I*
		Total ...	6	117	72,146	52,513	19,633 *I*

On the assumption that the distribution of the vaccinating staff employed was compatible with the requirements of each Circle, these figures indicate that the most satisfactory work was performed in the first Circle, and next in point of merit in the fourth Circle. On the other hand, the work in the second Circle has retrograded to a very serious extent, the total reduction amounting to so large a number as 20,509 operations, and all the three districts in this Circle sharing in the recession. This falling off can partly be accounted for by the intermission of work in the Murshidabad and Birbhum districts owing to distress from failing crops; but this cause does not apply to Nuddea. The figures of the third Circle show an increase of operations in the Hughli and 24-Pergunnahs districts, with decreases in the Burdwan and Howrah districts; the increment placed against the decrement yielding a net decrease of 3,331 operations performed. In this Circle distress prevailed in Burdwan, but not in Howrah. From the Diary of the present Deputy Superintendent of the fourth Circle, it appeared that during the incumbency of his predecessor very grave irregularities existed in the conduct of vaccination in the Midnapur district. Registers were not kept up; Inspectors neglected their work; cases of opposition to vaccination were not properly attended to by the Deputy Superintendent; and Inspectors and Vaccinators worked jointly instead of having specific areas allotted to them.

184. In the *Suburbs of Calcutta*, which also forms a part of the Metropolitan Circles, the operations were carried on in the whole area which forms the Municipality. As the Compulsory Vaccination Act is in force in it, the mode and plan of work followed in it will be described in the part of this Section of the Report which deals with the manner in which this Enactment was worked.

185. The field of work in the *Darjiling Circle*, in which operations were conducted by the Government and Licensed agencies, is identical with that taken up in the preceding year. The strength of the staff employed and the outturn produced by it are presented in the subjoined table. Cooch Behar is not included in this account, as vaccinations are carried on there under local arrangements :—

Superintendent.	Government Agency. Areas in which Operations were carried on.	Number of Inspectors.	Number of paid Vaccinators.	Total number of Operations performed. 1884-85.	1883-84.	Licensed Agency. Deputy Superintendents in charge.	Areas in which Operations were carried on.	Number of Inspectors.	Number of licensed Vaccinators.	Total number of Operations performed. 1884-85.	1883-84.
Surgeon-Major J. J. Wood.	Darjiling thanah ...	One head vaccinator for all the areas.	4	13,316	14,142	Moulvie Tajumul Hossein.	Dinajpur	2	30	35,134	34,581
	Kalimpong Sub-division		1				Purneah	2	31	45,371	36,537
							Julpaiguri	1	19	13,693	16,853
							Maldah	1	18	19,227	17,239
							Terai, portion of Darjiling	...	2	1,825	2,379
	Kurseong thanah ...		1			Assistant Surgeon Narendro Nath Gupta.	Rajshahye	2	28	34,967	37,539
							Rungpur	2	30	46,582	43,829
							Bogra	1	16	19,443	18,457
	Total ...	..	6	13,316	14,142		Total ...	11	174	216,244	207,894

The figures indicate that with an increase on the whole in the work of the Licensed agency there was some falling off in that of the Government agency. Considering the work in each district assigned to the Licensed vaccinators, Rajshahye, Julpaiguri and Terai portion of Darjiling are found to have fallen off very much in operations performed, which is traceable in the absence of explanation to less diligence exhibited by the staff.

186. In the *Ranchi Circle* the Palamow sub-division of the Lohardugga district was assigned to the Government vaccinators, and the Singbhum (excluding the Kolhan and including Dhalbhum), Manbhum, Hazaribagh and Lohardugga districts, and the Political States of Sirguja, Jushpore and Gangpore to the Licensed vaccinators. The particular areas in these districts, which were taken up, the distribution of the vaccinating staff over them, and the work performed by them, are shown in the subjoined tables:—

Government Agency.

Areas in which Operations were carried on.	Number of villages.	Number of Inspectors.	Number of Vaccinators.	Number of Operations.
Garwa thanah, half of Bhowthpur outpost of Hosseinabad thanah and Daltongunj thanah.	835	Inspector Shunkar Lall.	10	18,901
Remainder of thanah Hosseinabad, with exception of 12 villages to the south and east.	232	Native Superintendent Mitra Lall.	10	3,403
Ranka thanah, outpost Bhundariya, Baresand thanah, Manika thanah, Tanki outpost of Daltongunj, Manatu outpost of Patan thanah and Chatarpur thanah.	914	Native Superintendent Fazal Karim.	10	11,921

No comparison can be instituted between this and the preceding year's work, with the view of gauging the activity of the men in performing it, as the abovementioned areas are different from those which were taken up by the Government vaccinators in 1883-84. It should, however, be mentioned that the very small number of vaccinations (3,403) performed by the second batch of operators exhibited in the above table is entirely due to the work having been stopped on the 15th December, owing to the vaccinators having resigned for reasons explained in paragraph 180 of this Report. As a matter of fact, however, the perfunctory manner in which the vaccinating staff in this circle perform their work generally cannot yield good results.

Licensed Agency.

Districts.	Areas in which Operations were carried on.	Supervising Officers.	Number of Vaccinators.	Total number of operations performed. 1884-85.	Total number of operations performed. 1883-84.
Manbhum ...	Thanahs Purulia, Barabhum, Patkom, Jhalda, Baghmoondi, Jaipur, Para, Raghunathpur, Nirsha, Govindpur, Gourandi, Manbazar, Ichaghur, Topechanchi and Chass.	....	38	31,298	32,765
Hazaribagh ...	Thanahs Hazaribagh, Chowparun, Barhi and Bagodar.	Jowahir Lall, vaccinator.	12	23,851	20,417
	Thanahs Huntergunge, Chatra, Simuria Tandwa, Gawar, Kharackdihi, Girdhi.	Mahomed Ali Khan, vaccinator.	14		
	Thanahs Ramgarh, Juggeswar and Kashmar ...	Inspector Ahmuddin.	10		
Singbhum ...	Thanah Seraikela, including Kochang, Koraikela, Dugni and Barshai.	....	8	13,124	10,033
	Thanah Ghatsila	....	6		
	Thanah Chuckurdhurpur	....	3		
	Thanah Kharsowan	....	2		
Lohardugga ...	Thanahs Silli, Ranchi, and Mandar or Choreya ...	Mahomed Ali, vaccinator.	10	26,264	2,751
	Thanahs Ranchi, Kara, Sisoi, Khunti and Tamar ...	Luchmun Sahi, vaccinator.	15		
	Thanahs Barway, Balumat, Lohardugga and Mandar	Nakheed Lall, vaccinator.	12		
Political States ...	Sirguja, Jushpur and Gangpur	....	40	20,210	25,200

A considerably reduced number of operations were returned by the vaccinators of the Manbhum, Hazaribagh and Singbhum districts, in comparison with the results achieved in the same areas during the preceding year, indicating great laxity on their part. The large amount of work done this year by the Licensed vaccinators in Lohardugga is not susceptible of comparison with the small number of operations performed in 1883-84, as this number represents work done during the recess by the Licensed vaccinators, the major

portion of the vaccinations in the district having been performed by the Government agency. In order to meet the prejudices of the people against Mahomedan operators, the Superintendent again took care to see that almost the whole of the Vaccinators consisted of Bengalis, Up-countrymen, Sudhras, Kyesths, Aroans, Rajpoots, Quiries and Brahmins—the number of Mahomedan operators being reduced to 13. There were also two Christian vaccinators.

187. In the *Sonthal Pergunnahs* Circle the undermentioned areas were taken up by the Government and Licensed agencies respectively:—

GOVERNMENT AGENCY.

Districts.	Areas.	Number of Vaccinators during: Working season.	Recess.	Number of Operations performed.
Bhagulpore.	Kotareah	6	......	3,833
	Umerpore	6	4	7,711
	Banka	6	4	5,922
	Kotowalli	12	6	4,502
	Sultanganj	6	2	3,160
	Colgong	6	4	10,181
	Bihpore	6	4	8,014
	Kisbenganj	7	......	5,637
	Soopole	4	... .	947
	Partabganj	1	......	301
	Total ...	59	24	50,808
Monghyr.	Jamui	1	3	811
	Sekundra	......	1	61
	Beguserai	......	3	610
	Kharagpur	3	3	1,234
	Monghyr	2	3	1,287
	Jamalpore	1	......	206
	Surajgurha	1	......	23
	Gogri	1	.. .	692
	Total ..	9	13	4,924
	GRAND TOTAL ...	59	37	55,732

LICENSED AGENCY.

Districts.	Areas.	Number of Vaccinators during: Working season.	Recess.	Number of Operations performed.
Sonthal Pergunnahs.	Sahebgunge	1	1	1,655
	Rajmahal	2	2	4,122
	Pakour	10	1	9,339
	Burharwa	3	1	5,199
	Mohespur	5	.....	4,165
	Godda	5	2	4,285
	Mohagama	2	2	1,530
	Pareja	6	... .	2,825
	Dumka	27	6	10,148
	Deoghur	5	3	7,910
	Jamtara	6	2	8,758
	Modhupore	4	1	2,303
	Sarat	3	1	4,493
	Total ...	79	22	64,223
Bhagulpore.	Soopole Sub-division / Muddehpurah do.	4	......	3,093
	GRAND TOTAL ...	83	22	67,316

It will be noticed that in almost all the areas named in the above table vaccination was carried on during the whole year. The cause of carrying on operations during the recess was the existence of small-pox in the areas in question during that period. The disease has been prevailing severely and persistently in this Circle, particularly in the Sonthal Pergunnahs, Monghyr, and Bhagulpur districts, for the past three years without having yet been eradicated, notwithstanding the retention for this purpose of a costly establishment during the recess seasons of those years. An examination of the above figures shows clearly that the work performed by the vaccinators during the year under review was insufficient and relatively very disproportionate, and as the same observations apply to the work of the two preceding years, the total vaccinations* during which did not differ strikingly from those of this year, it is not to be wondered at that the disease has not yet been subdued. A considerably greater amount of energy and systematic working must be brought to bear on the matter before a satisfactory result can be expected.

		Number of Operations
* In 1882-83	...	134,571
„ 1883-84	...	106,985
„ 1884-85	...	123,048

188. The *Government* and *Licensed* agency in the *Eastern Bengal* Circle undertook the vaccination of the areas indicated in the subjoined table:—

GOVERNMENT AGENCY.

Districts.	Native Superintendents.	Head Vaccinators.	Paid Vaccinators.	Apprentices.	Number of Operations during 1884-85.
Tipperah	......	6	65	29	154,268
Noakhali	1	1	26	14	52,413
Dacca	} (Recess work)		1	......	2,828
Backergunj			......	......	900

LICENSED AGENCY.

Districts.	Inspectors.	Native Superintendents.	Licensed Vaccinators.	Number of Operations during 1884-85.
Dacca	1	......	51	40,125
Faridpur	1	......	41	38,717
Pubna	1	......	33	29,772
Mymensing	2	......	71	70,764
Tipperah	1	... ..	15	7,013
Noakhali	......	1	3	270

In Tipperah operations were carried on in all its 11 thanahs, viz., in Daudkandi, Hajigunge, Choudagram, Chandpur, Laksham, Chanduria and Kasba by the Government vaccinators, and in Muradnagar, Brahmanberia, Comillah, Nobinnagar and Barakampta by the Licensed agency. In Noakhali only two thanahs—Begumgunge and Ramganj—were operated on by the latter agency. One thousand seven hundred and forty-one of the operations in Dacca represents recess work, and with regard to the presence of Government vaccinators in it, when it has been for a long time worked under the Licensed System, the Superintendent writes:—"A chur in the Munshiganj thanah of the district of Dacca, which has always resisted the introduction of vaccination, has in part yielded this year. This is an example showing that vaccination advances with familiarity when it is not opposed by unsurmountable religious bigotry, and this I am bound to say is not a solitary instance in my experience. The men of these churs (who market across the Megna river) finding the Mahomedans in thanah Hajigunge accepting vaccination, got over their scruples, and a considerable number have received the protection, though a great many still remain obdurate. These very people resisted vaccination from its first introduction into the district so far back as 1872." The few operations in the Backergunge district represents work done during the recess. Every thanah in the Dacca, Faridpur, Mymensing and Pubna districts was under operation by the Licensed agency, and a little work was also done by it in thanahs Sudharam and Bamni in Noakhali.

189. The work in the *Orissa* Circle is done entirely by Government vaccinators, the Licensed System not having yet been introduced into it. The operations were carried on this year in the thanahs in the Cuttack and Puri districts, in the Tributary States, and with the Establishment indicated in the following table:—

Districts.	Thanahs.	Number of villages.	Supervising Officers.	Vaccinators.	Apprentices.	Number of Operations performed.
CUTTACK ...	Cuttack town and Cantonment ...	......	......	......	......	344
	Cuttack	85		2	1	1,446
	Kendrapara	207		3	.....	3,503
	Salipur	170	1	2	......	2,782
	Patamundi	151		3	......	6,900
	Aul	195		3	.....	2,400
	Jajipur	89	1	4	......	2,724
	Dharmsala	403		4	2	12,442
	Jugatsingpur	15	1	3	1	110
	Tirtol	28		3	......	407
	Banki Tributary State	21	......	2	......	487
	Total ..	1,364	3	29	4	33,545
PURI ..	Sonapadar outpost in Khurda Sub-division	148	......	2	......	3,648
	Brahmagi outpost in Sudder thanah ..	68	......	4	......	2,043
	Total ...	216	......	6	.....	5,691
	Mourbhunj	102	1	3	......	6,135
	Baramba	52	......	1	......	1,573
	Atgur (Chogan, a Native Christian village)	4	......	1	......	27
	Total ...	158	1	5	......	7,735
	GRAND TOTAL ...	1,738	4	40	4	46,071

The actual work of the year was conducted in the unprotected areas of the Cuttack district, in order that this district may be prepared for the reception of the Licensed System of operations, which is proposed to be introduced into it at the next working season. Vaccination was carried on in the areas in the Puri district named in the above table, because small-pox had broken out in them. The Tributary States also received protection to some extent, and the Native Regiment stationed at Cuttack was vaccinated with lymph supplied by the Superintendent of this Circle.

190. The subjoined table shows the distribution of operations in the *Behar* Circle :—

Government Agency.

Districts.	Thanahs.	Head Vaccinators.	Vaccinators.	Number of Operations.
Shahabad.	Arrah	1	9	4,512
	Belouti	1	9	3,943
	Dumraon	1	12	9,380
	Buxar	1	9	8,228
	Dhungaon	1	9	4,540
	Peeroo	1	9	4,105
	Total ...	6	57	34,708
Patna.	Recess work in Behar, Hilsa, Ataserai, Silao, Maner, Bikram, Dinapore, Bankipore, Masourhi, Pirbahar, Alumgunge, Bhaykula, Sultangunge, Malsamah and Chowkhallon.	5	35 from Shahabad	3,027
	Grand Total ...	11	57	37,735

Licensed Agency.

District.	Thanahs.	Head Vaccinators.	Vaccinators.	Number of Operations.
Patna.	Bankipore	1	37	593
	Masourhi			1,004
	Bikram			1,508
	Dinapore			41
	Maner			1,375
	Futuha			1,511
	Malsalami			15
	Total ...	1	37	6,137
	Barh	1	46	3,294
	Mokameh			2,171
	Behar			2,826
	Hilsa			1,709
	Ataserai			282
	Silao			601
	Total ...	1	46	10,883
	Grand Total ...	2	83	17,020

In the Shahabad district in only thanahs Arrah and Peru operations were carried on during the preceding year, the remaining thanahs named above were taken up for the first time this year. The Patna district having been pronounced in 1883-84 to have been thoroughly protected, with the exception of a few outlying villages, the Licensed System of vaccination was introduced into it during the year under review. With regard to the Mozufferpur district in this Circle, which has not yet been touched by vaccination, the Magistrate, Mr. Marindin, submits the following observations :—"I believe many Indigo-planters keep a dispensary, and give medicines and medical assistance to their ryots and factory hands, and I would suggest the plan of furnishing any of these gentlemen, who would undertake the work, a supply of lymph. The operation is a simple one, and if we could enlist the services of the Planters, a ready means of extending vaccination throughout the district, at all events among the lower castes, presents itself. I have not yet spoken to any of the Indigo-planters in the matter ; but, if my idea commends itself to the Sanitary Commissioner, I will do so, and report the result. It certainly is in the interests of the planting community to help Government in keeping down the ravages of small-pox." No immediate action can be taken on this suggestion, but when the district is taken up by the Government agency, no effort should be spared to enlist the assistance and sympathy of the Planters to aid in vaccination. Dr. Mathew, the Civil Surgeon, does not look forward with much hopefulness to the success of vaccination in the immediate future.

Plans which determined the conduct of Operations in the *Municipalities.*

191. During the year under review, vaccination was conducted in 46 Sudder Municipalities, including four Cantonments, 99 outlying Towns and 15 Dispensaries. With a few exceptions, in which the surrounding villages were taken up, operations were carried on within the jurisdictions of the Municipalities and Towns. As usual, the work in the Dispensaries was confined to those who came to them to be vaccinated. Apart from the abovementioned institutions, 6,491 vaccinations were performed by 27 operators in the following places, which are included in statement No. III in Appendix V showing the municipal work, viz., to the prisoners in the jails of Motihari, Noakhali, Jessore, Khulna, Rajshahye, Julpaiguri, Faridpore, Arrah and Mymensing (including the Police) by the Medical Officers in charge of them ; to the children on the line of Railway from Sara to Silliguri by a licensed vaccinator paid by the Northern Bengal State Railway authorities ; to the boys in the zillah school in the Mymensing Municipality by the Civil Surgeon ; to the employés in the tea gardens at Kurnafooli by a vaccinator paid by the Kurnafooli Association ; to children in the neighbourhood of the Somastipur Railway Junction, and to the workpeople

in the Indigo factories at Hatouri, Ilnasnugger and Pamdoul under the superintendence of the European managers, with lymph supplied by the Civil Surgeon of Durbhunga; to people in the Ullapore pergunnah in Durbhunga in 62 villages, within a radius of 10 miles, and to those who reside near the Naraya dispensary by two vaccinators paid by the Maharajah of Durbhanga; to people who resorted to the Hutwa, Bhori, and Gopalgunge Dispensaries in Sarun and in the surrounding villages, by four vaccinators paid by the Hutwa Raj; to the Angul Estate in Cuttack by two vaccinators paid by Government; to the employés at the Jamalpur Railway station by two vaccinators employed by the East Indian Railway Company; and to people in the Dhenkanal Tributary Mehal in Cuttack within 20 miles on the north and south of the ghur (fort) by two vaccinators paid by the Estate, the object being to familiarize the people to the measure, so that inoculation, which is largely practised in this jungly place, may be suppressed. The subjoined statement shows the number of operations which were performed in the institutions and places above referred to:—

AREAS.	Number of Operators.	Number of Operations performed.
Sudder Municipalities	87	46,413
Outlying Towns	109	32,339
Dispensaries	23	2,812
Jails	11	243
Other places	10	4,229
Total ...	240	86,036

192. Finding that Civil Surgeons could not give the required attention and supervision to vaccination in outlying Municipalities, even if they could do so with regard to the Municipalities at the head-quarters of districts where they are located, I submitted the question to Government, and obtained sanction to place vaccination in the Sudder Municipalities under the Civil Surgeons; that of outlying Municipalities to which Assistant Surgeons are attached under those officers, and that of all other Municipalities removed any distance from the head-quarters, and not easily accessible by rail under the Superintendents of the Vaccination Circles; the returns of the Sudder Municipalities being submitted to this office, as hitherto, by the Civil Surgeons, and those of Municipalities under the Assistant Surgeons and of Vaccinators of all the other Municipalities through the Superintendents of Vaccination of the Circles in which they are respectively situated. A list indicating the distribution of the Municipalities under the above arrangements was circulated, and the scheme, under which the responsibility of vaccination in Sudder Municipalities is vested in Civil Surgeons and of all the other Municipalities in Superintendents of Vaccination, and which applies to all Municipalities, excepting those situated in the Behar and Orissa Circles, where vaccination is not yet sufficiently advanced, and to those districts where the Circle System of vaccination has not yet been brought into operation, was given effect to during the year under review.

Revised Scheme for the control and supervision of Vaccination in Municipalities.

Dr. Ghose, the Officiating Superintendent of Vaccination, Metropolitan Circles, who paid great attention to the 42 Municipalities placed under his supervision, reports that he is not satisfied with the arrangements obtaining in most of them, and that he had many drawbacks to contend with in supervising the work, the chief being that the Municipal Commissioners did not seem to recognize their responsibility with regard to vaccination, and grudged the expense for carrying it on; that the vaccinating staff in these Municipalities were not familiar with the working of the Compulsory Act; that several Municipalities could not afford to employ a permanent vaccinator, and it was difficult to procure industrious and good men for one, two, or three months only, the result being that incompetent men were entertained, this being especially the case in the Municipalities in the Bussirhat Sub-division; that in many Municipalities vaccine stations, as required by the provisions in the Compulsory Vaccination Act, could not be established owing to the municipal area being too large for one vaccinator; and that in most Municipalities,

where vaccinations were carried on for a very short time, the operations could not be inspected conveniently at the proper time. The operations were supervised, in most of the Municipalities placed under the Superintendent, by the Deputy Superintendents and Inspecting Vaccinators of the divisions in which they are located. Dr. Ghose inspected 2,818 operations in these towns and found them successful.

DEGREE OF PROTECTION AFFORDED IN THE VACCINATION CIRCLES.

Degree of Protection in *Calcutta*.

193. Vaccination was as usual carried on throughout *Calcutta*, no ward in it escaping the application of the measure, but still it cannot be said that the Metropolis is thoroughly protected. Those sections of it which are inhabited by Europeans and the permanently fixed Native population are better protected than those in which the population is a floating one, and where up-country people reside, particularly in Barabazar and Jorasanko. Here it is extremely difficult to get information of unprotected persons and children. The number of deaths from small-pox during 1884-85 amounted to 394, or at ·90 per 1,000 of population, against 193, or at ·44 per 1,000 in the preceding year, the average of the lustrum 1879-80 to 1883-84 being ·39 per 1,000, indicating that the Metropolis needs a great deal more protection, and I am convinced of this by personal observation.

Degree of Protection in the *Metropolitan* Circles.

194. On this subject Dr. Ghose, who officiated as Superintendent of these circles during the major portion of the year, writes:—"It has been customary in these reports, year after year, to say that all these districts have been thoroughly protected. But the statistics bear internal evidence of the fact that it is not so, for among those vaccinated during the year a large number (67,439) were above six years of age. In every part of the country I visited, I found a village here and a village there that has up to this successfully resisted vaccination, and there is scarcely a village in which one or two families have not done the same. When outbreaks of small-pox occur, the existence of these unprotected villages, or groups of families in a village, come to light. In one outbreak in the Howrah district so many as 63 fell victims to the disease before the locality could be protected. In the Kushtea bazar, where the Compulsory Vaccination Act was in force, so many as 38 unprotected persons existed to get small-pox on the arrival of a Kabuli fruit-seller with the infection. I have collected a list of the villages in some of the districts in which the whole or a large portion of the inhabitants are still unprotected, and are still successfully resisting vaccination. They are situated in—

Midnapur	356	Khulna	59
Bankura	40	Hughli	40
Nuddea	23	Murshidabad	56

This is not all in the districts mentioned, and I have not yet been able to collect the lists of other districts in the Circle. But, generally speaking, Midnapur is the worst district in this respect. In it there are groups of villages, specially in the Sabong thanah, which are still unprotected. But every year a few of the objecting villages are being overcome, but at the rate of progress now being made in this direction, it will take years to complete the thorough vaccination of these circles in the strict sense of the word." In his Diary for February 1885, Dr. Ghose reports:—"Jagool and Baliapota in the Keshpur thanah (in Midnapur) were never visited by a vaccinator before, and small-pox was a regular visitor. A large number died from it three years ago, which is fresh in the memory of the people, and this year, on the appearance of the disease, they invited the vaccinators working in the Midnapur thanah, on the opposite bank of the river, and got the whole village vaccinated. The small-pox was thus most effectively stamped out; the number of attacks did not go beyond three, although the unprotected individuals numbered 148." To Dr. Ghose's statements the following observations of Dr. Roy, the Civil Surgeon of Birbhum, give much support. He writes:—"From the constant complaint that reaches me from the Licensed Vaccinators about the realization of their fees, I am convinced that under the new system [Licensed] thorough vaccination cannot be afforded, inasmuch as it is not likely to reach the poor and the needy, who, encumbered as a rule with ever multiplying numbers of children, have no means to satisfy the demands of the

vaccinators, who are paid by their work. Thus there are left here and there foci of unprotected spots, that in unfavourable seasons must contribute their quota of deaths. Vaccination is a tree of recent growth in India. To leave the tender plant to be supported by the mercy of the people will be to stifle its growth and jeopardize its credit. I beg to question very much the advisability of the system that leaves an important life-protecting measure to be supported by an unenlightened public, with the view of showing an insignificant saving to the Government exchequer. To say the least, it is an economy misdirected and premature in its adoption. The statistics marginally given serve to illustrate Dr. Roy's view of the matter, but perhaps not so unfavourably as might be expected.

Fairly Protected Areas

	Number of deaths in— 1884-85.	1883-84.		Number of deaths in— 1884-85.	1883-84.
Burdwan ...	254	109	24-Pergunnahs	94	51
Bankura ...	19	13	Nuddea ...	173	206
Birbhum ...	35	15	Jessore ...	21	5
Hughli, including Serampore ..	83	27	Khulna ...	13	11
Howrah ...	60	18	Murshidabad	29	285

Partially Protected.

				1884-85.	1883-84.
Midnapur ...	...		...	168	157

195. Dr. Ghose finds that the number of births registered in the *Suburbs of Calcutta* during the year under notice was 4,999; that of this number 1,663 died; and that contrasting the balance—3,336—with 1,819, the number of children under one year who were vaccinated, 1,517 infants born were left unprotected, irrespective of the number who escaped registration, and of the number who came in from other parts of the country. Referring to the adults, he reports that of 122 cases of small-pox which came under notice, 85 were adults, and 63 of this number were unprotected. From these figures it is clear that, contrary to the statement of former years, a large proportion of the Suburban population remains unprotected. But, according to Dr. Ghose, it is difficult to bring the infant population under control, for young children, specially in Mahomedan zenanas, are never brought out of them before they are two or three years old, and even then the female children are still kept in seclusion. If the birth registers disclose their existence anywhere, the reply to the enquiry about them is that they have been sent into the mofussil to their paternal and maternal homes. Again, it has been found that a fictitious address is given at the time the birth is registered, and that it is therefore impossible to trace the whereabouts of the child. It is hoped, however, that another two or three years of steady working of the Compulsory Vaccination Act may smooth down these difficulties, and render vaccination complete in the Suburbs. The deaths from small-pox in the Suburban Municipality amounted to 169 during 1884-85 against 158 in the preceding year, and 144 during the preceding lustrum, affording proof that much protection is yet required.

Degree of Protection in the *Suburbs of Calcutta.*

196. The information furnished by Dr. Wood under this head is very meagre and rather vague. He says, with regard to the places taken up for vaccination by the Licensed agency, that "all parts of the circle have been gone over by the Government agency in past years," and with regard to those taken up by the Government agency, that they "are protected every year—many almost perfectly," and that "immigration prevents this [thorough protection] phenomenon." Considering the circle as well advanced in protection, we find that the mortality from small-pox in the districts which comprise it stands as exhibited in the margin, indicating that Dinajpur, Rajshahye and Purneah demand much further attention.

Degree of Protection in the *Darjiling* Circle.

	Number of deaths. 1884-85.	1883-84.		Number of deaths. 1884-85.	1883-84.
Dinajpur	56	5	Bogra	16	4
Maldah	13	14	Darjiling		40
Rajshahye	65	12	Julpaiguri		10
Rungpore	5	6	Purneah	48	13

197. The report from the *Ranchi* Circle shows that no part of it has been thoroughly protected, excepting thanah Para in Manbhum; and that partial protection has been afforded to the whole circle, excepting two or three villages, and part of the Kolhan in Singbhum, and some villages in Hazaribagh and Lohardugga, which have not yet been touched. The work in the areas taken up for this year's operations is said to have been "well done, all villages in all thanahs

Degree of Protection in the *Ranchi* Circle.

being worked with few exceptions." In Lohardugga difficulties were experienced in vaccinating children. The people, particularly the higher castes, deny having any children, or hide them in their houses, or send them to other places on the approach of the vaccinators, and no assistance can be had from the chowkidars in the matter. In a large portion of Hazaribagh, however, the proportion of unprotected adults, who strongly object to receive vaccination, is greater. The mortality from small-pox in this circle stands as marginally given.

	Number of deaths. 1884-85.	1883-84.
Thoroughly protected—		
Thanah Para in Manbhum	3	...
Partially protected—		
Manbhum, excluding thanah Para	37	32
Lohardugga	217	17
Singbhum, excluding Kolhan	17	42
Very partially protected—		
Hazaribagh	750	405
Kolhan in Singbhum	...	24

Lohardugga and Hazaribagh appear to require considerably more protection.

198. In the *Sonthal Pergunnahs* Circle the areas said to have been almost thoroughly protected are thanahs Colgong, Banka, Bhagulpore, Sultangunge, Bihipore, Umurpore, and Katoreah in the *Bhagulpore* district; and thanahs Dumka, Rajmehal, Pakour and Deoghur (excluding Jamtara) in the *Sonthal Pergunnahs* district; the partially protected areas are thanahs Surajgurrah, Monghyr, Gogri, Khargpur, Beguserai, Sekundra, Jamalpur, Jamui, and Chakye in the Monghyr district; thanahs Muhdehpura, Kissengunge, Soopol, Pertabgunge and Bungaon in the *Bhagulpore* district, and Jamtara and Godda thanahs in the *Sonthal Pergunnahs* district; and the untouched areas are the Shaikpura and Tegra thanahs in the *Monghyr* district. The above is a more qualified statement than that submitted in the reports of former years, and the persistency with which small-pox has prevailed in these districts during the past three years indicates that the want of protection is very great, as the small-pox statistics exhibited in the margin abundantly prove. The thanahs in Bhagulpore and Monghyr, stated by the Superintendent to have well advanced in protection, do not appear, by the light of the marginal figures, to have done so; and the thanahs in Monghyr said to have been partially protected require considerably more protection. The Superintendent reports that the Rajpoots and Mughia Brahmins in some thanahs in Bhagulpore obstinately refuse, notwithstanding much persuasion, to receive vaccination, and that great resistance is also offered in every place in the Monghyr district, especially in Begooserai, where the law prohibiting inoculation is not in force, the opposition having been so great that the staff employed during the recess of this year to suppress outbreaks of small-pox in that district had to remain inactive for a considerable while.

Degree of Protection in the Sonthal Pergunnahs Circle.

	Number of deaths. 1884-85.	1883-84.
Well advanced in protection—		
Bhagulpore—thanahs named in text	993	316
Sonthal Pergunnahs—thanahs named in text	191	148
Partially protected—		
Monghyr—thanahs named in text	669	308
Bhagulpore thanahs named in text	21	2
Sonthal Pergunnahs—thanahs Jamtara and Godda	37	22
Entirely unprotected—		
Monghyr—thanahs Shaikpura and Tegra	235	66

199. In this Circle the districts of Dacca, Faridpore, Mymensing, Pubna and Tipperah are said to be protected, the last-named district having been completed during the year under notice, the others during the preceding year; thanahs Sudharam, Bamni, Begumganj and Ramganj in Noakhalli have been partially protected; and to thanahs Chagulnai, Fenny, Hatia, Sundip, and Lakhipore in the same district, and to the districts of Chittagong and Backergunge vaccination has not yet been extended. The mortality from small-pox in this circle, distributed over it according to the protection afforded to them, stands as shown in the margin. From the very severe prevalence of small-pox in Dacca and Tipperah, they cannot, as affirmed by the

Degree of Protection in the Eastern Bengal Circle.

	Number of deaths. 1884-85.	1883-84.
Thoroughly protected—		
Dacca	511	163
Faridpore	24	86
Mymensing	96	510
Tipperah	215	374
Pubna	10	16
Partially protected—		
Noakhalli—thanahs mentioned in text	117	296
Entirely unprotected—		
Noakhalli—thanahs mentioned in text	144	140
Chittagong	3	5
Backergunge	202	427

Superintendent, have been thoroughly protected, and it is singular that Chittagong, where one or two vaccinators, appointed by Government (during previous years, but not during this year) have worked spasmodically, should exhibit so low a mortality as that indicated above. Imperfect registration has no doubt much to do in the matter.

Degree of Protection in the Orissa Circle.

200. In the *Orissa* Circle, thanahs Jajipore and Dharmsala in the *Cuttack* district are reported to have been now thoroughly protected, excepting some new-born children and adult females of high caste. To reach these it is proposed to extend the law prohibiting inoculation and the Licensed System of vaccination to these thanahs, and this question is about to be submitted to Government for orders. Thanahs Cuttack,* Kendrapara,* Salipore,* Patamudi,* Aul,* Juggutsingpore,* and Tirtolla* in the *Cuttack* district; thanahs Chandballi,* Balasore, Basta, Jellasore, Bhadrak and Dhamnagur in the *Balasore* district, and thanahs Gope, Puri,* Khurda, excluding its Bhoboneswar outpost, and Banpur,* excepting its Chumpagarh outpost, in the *Poori* district, have been partially protected. The thanahs marked with asterisks are more advanced in protection than the others, but still a great deal has to be done in them to induce people of high caste to accept vaccination. The Bhoboneswar outpost of Khurda and the Champagarh outpost of Banpur in the Puri district, and thanahs Soro, Baliapal, and Basudebpore in the Balasore district have not yet received any protection. The death-rates from small-pox in the abovementioned areas are indicated in the margin. Thanahs Jajpur and Dharmsala in Cuttack, said to have been thoroughly protected during the year under review, appear to have suffered much more severely from small-pox than during the preceding year, when they were partially protected. On the whole there is much vaccination to be done in Orissa.

	Number of deaths.	
	1884-85.	1883-84.
Thoroughly protected—		
Cuttack—thanahs Jagipur and Dharmsala	398	292
Partially protected—		
Cuttack—thanahs named in text	660	762
Balasore—ditto ditto	168	174
Puri— ditto ditto	256	649
Entirely unprotected—		
Balasore—thanahs Sore, Baliapal and Basudebpore	58	83
Cuttack—thanah Banki	59	10

Degree of Protection in the Behar Circle.

201. In the report of this Circle for the preceding year, it was said that the whole of the Patna district (with the exception of a few villages in each thanah and the Geriak outpost in thanah Behar), thanahs Motihari and Dhaka in Chumparun, excepting a few villages, and about three-fourths of the Arrah thanah in Shahabad had been thoroughly protected. The following statement made by the Superintendent this year is quite at variance with the above. He says that the *only fairly well protected* areas (not *thoroughly* protected) in Patna are thanahs Barh, Mokamah, Futuha, and Behar; that the partially protected areas are the rest of the thanahs in the Patna district (Dinapore, Maner, Ataserai, Silao, Patna, Bankipore, Masourhi, Bikram and Hilsa), thanahs Motihari and Dhaka in the Chumparun district, and thanahs Buxar, Dumraon, Dhungain, Pero, Arrah, and Belouti in the Shahabad district; and that the altogether unprotected areas are the remaining thanahs in the Chumparun and Shahabad districts, viz., Bettiah, Gobindgunge, Baguha, Mudhubun, Kesuriah, Adapore, and Lourya in the former district, and Sasseram, Nokha or Kharger, Bhabuah, Dehri and Mohania in the latter, and the entire districts of Mozufferpore, Durbhunga, Sarun and Gya. The effect which vaccination has had on small-pox prevalence in this Circle will be seen from the statistics furnished in the margin. These figures indicate that a great deal of attention is yet needed, not only in the Patna district, which was placed last year under the Licensed System of vaccination, but also in the thanahs in Chumparun and Shahabad, which are being worked by Government vaccinators. It appears to me that the Superintendent of this Circle cannot efficiently protect any district.

	Number of deaths.	
	1884-85.	1883-84.
Fairly well protected.		
Patna—thanahs named in text	210	118
Partially protected.		
Patna—thanahs named in text	1,417	691
Chumparun ditto ...	505	239
Shahabad ditto ...	460	33
Entirely unprotected.		
Chumparun—thanahs named in text.	1,391	527
Shahabad ditto ...	144	40
Mozufferpore	272	197
Durbhanga	312	277
Sarun	2,466	982
Gya	2,090	1,328

202. In the subjoined table are shown the Municipalities which are reported to have been thoroughly protected, well advanced in protection, or fairly well protected with the mortality from Small-pox recorded in them.

Degree of Protection in the Municipal Area.

Thoroughly protected.			Well advanced in protection.			Fairly well protected.		
Municipalities.	Number of deaths in— 1884-85.	1883-84.	Municipalities.	Number of deaths in— 1884-85.	1883-84.	Municipalities.	Number of deaths in— 1884-85.	1883-84.
Bankura	......	......	Burdwan	10	3	Rajpore	......	......
Midnapore	6	2	Serampore	16	......	Goberdanga	......	......
Hughli and Chinsurah	4	3	Berhampore .. .	......	......	North Barrackpore .	1	......
Jessore	......	......	Pubna	1	......	Satkhira	......	......
Dinajpur	1	......	Durbhunga	83	52	Chanduria	......	......
Barisal	1	1	English Bazar	2	4	Santipore	2	1
Nasirabad	......	......	Dumka	9	......	Kushtea	15	......
Sudharam	......	......	Barripore	......	......	Ramjibanpore	1	......
Comillah	1	......	Ranaghat	......	......	Bishenpore ..	......	......
Ranchi	......	......	Howrah	22	12	City Murshidabad ..	5	6
Sherpur in Bogra ..	......	......	Joynuggur	......	......	Jungipore	2	3
Serajgunge in Pubna ..	......	......				Kandi	......	......
Bansberia	4	......				Brahmunbariah ...	......	4
Baraset	1	......						
Total ...	18	6	Total ...	143	71	Total ...	26	14
Ratio per 1,000 of population (Population 219,646).	·07	·02	Ratio per 1,000 of population (Population 199,430).	·19	·24	Ratio per 1,000 of population (Population 196,149).	·13	·07

The above figures indicate that the influence of vaccination has had a decided effect in reducing the mortality from small-pox in the Municipalities said to be thoroughly protected, but that the mortuary records do not support the statement that protection has well advanced in Durbhunga and Howrah, or that Kushtea is fairly well protected. Of the remaining 108 Municipalities, 42 are said to have been partially protected. In these (excluding Khulna, of which no separate death record exists) 1,469 casualties from small-pox occurred among their population, numbering 1,024,042, yielding a death-rate of 1·43 per 1,000 against 910 deaths, or at ·88 per 1,000 in 1883-84. The remaining 66 Municipalities are reported to be very partially protected. In these (excluding 16, of which no data are available) there were recorded 251 deaths among their population of 632,913, the proportionate death-rate being ·39 per 1,000 against 116 deaths, or at ·18 per 1,000 in the preceding year.

203. The following observations made by the Medical Officers in charge in connection with the degree of protection in their towns may be found interesting. In *Burdwan* small-pox never gets any firm hold in spite of the periodical introduction of the disease from other places. This is advanced as a ground for believing that the town is well protected. The Kalna town requires a great deal more protection. The Civil Surgeon of *Midnapore*, Dr. Tomes, observes:—"Owing to the extinction of unprotected material by the vaccination of the youth, adolescent and adult population, the number attending the stations now grows smaller and smaller. This is what must be expected. The work of the future will be confined more and more to infant vaccination. The next step in bringing the system into complete working will be the seeking out of infants by the municipal birth register and the carrying out of the rules under sections 18 to 23 concerning vaccination in connection with registration. It has been necessary to introduce the different parts of the scheme by degrees to avoid confusion and failure. Arrears having now been largely cleared off, the outturn of work in future years will be smaller, but will be attended with more trouble, and perhaps more expense. There will be a scarcity of vaccinifers, and the unprotected children will require seeking out at their homes. As the Municipality now entertains a Sanitary Inspector, this looking up the children by the (birth) register should be made a most important part of his duty." The *Baranagore* Municipality has been fairly protected so far as the fixed population is concerned, but there is always a large floating population of up-country people attached to the many factories in this place, to vaccinate whom it is necessary that work be carried on all round the year, instead of during only the working season. The *Baraset* Municipality was fairly vaccinated in previous years, and the work of this year gave it complete

Observations of the Medical Officers on Protection in Towns.

protection. There was only one case of small-pox; the people are too well-protected for the disease to spread. The *Nyehatti* town requires more protection, as there are mills there. The one vaccinator allowed by the Municipality is inadequate for a population of 21,533. Vaccination also requires to be kept up throughout the year. In *Dinajpur* it was observed that unprotected children still exist who could not be operated on owing to ill-health or unwillingness on the part of parents to have them vaccinated on account of commencement of an unusually hot season. *Beauleah.*—The unprotected have been reduced to a low figure, but the Civil Surgeon is fully convinced that there are still a good many remaining to be protected The death-rate from small-pox in this town during the year under review amounted to 2·32 per 1,000 against no mortality in the preceding, year, and ·04 per 1,000 during the lustrum 1879-80 to 1883-84, indicating that the town has been kept in a very unprotected state. The reason for considering the *Sudharam* town to be well protected is that not a single case of small-pox was reported to have occurred in it during the year. It is stated that in the *Comillah* town the vaccinator could not find sufficient work owing to the greater part of the young portion of the population being already protected. The drawback against the thorough protection of the *Durbhunga* Municipality is that it is very large and densely populated. A singular step was taken this year in the *Purneah* Municipality, with the view of promoting vaccination, viz., warning was given to the people that if they did not get themselves vaccinated they would, if small-pox broke out among them, be isolated or required to go out of the municipal boundary. In old *Maldah* town most of the children under one year are unprotected, as the people will not have them vaccinated before they attain that age; but the chief reason is the retention by the Municipality of an incompetent vaccinator. It appears to the Civil Surgeon that the *Nya Dumka* town has been pretty fairly vaccinated—almost wholly—though not completely protected. The exceptions are a few well to-do people, who are not willing to send their children to the dispensary, but are willing to have them vaccinated at their houses. As the Municipality had engaged no vaccinator this could not be done. The Deputy Commissioner, however, observes that "under present circumstances I think it is a mistake to treat Dumka as a town. It is not a town, though it might be called a fairly large village in respect to the number of its inhabitants; but as there is a large and continuously changing temporary population, it should, I think, get more protection than is at present accorded to it. All the villages surrounding it require to be thoroughly protected by the Government vaccination establishment. It would be better if the vaccination department included Dumka in its operations, as with a special department at work the town would stand a chance of being better protected than it does at present when the work is left to an over-worked Hospital Assistant, who deals only with those persons actually brought to him." Except for the coolies and other unprotected persons coming into *Sahibgunge* town, which is a commercial centre, it may be considered completely vaccinated. The town of *Ranchi* is considered to be fairly well protected owing to the entire absence of small-pox, though it was prevalent in the surrounding villages.

Summary.

204. In summing up the work of the year, so far as it is connected with the areas vaccinated and the protection afforded, it is found—

(1) That *protection was afforded for the first time* by Government vaccinators to the following areas:—In the *Eastern Bengal* circle to thannas Daukandi, Juggunathdighi, Chandpur and Laksham in the Tipperah district; and to thanah Chagulniah and Fenny in Noakhalli; in the *Orissa* circle to thannas Patamundi, Aul, Dharmsala, Banki, Juggutsingpur and Tirtol in the Cuttack district; and in the *Behar* circle to thannas Buxar, Dumraon, Dhangain and Belouti in Shahabad.

(2) That the following areas were *for the first time placed under the Licensed System of vaccination* after they had been traversed by the Government vaccinators. In the Eastern Bengal circle thannas Nussirabad, Sherpur, Agarsindhoo or Nickley, Kishoreganj, Netrokona, Kendu or Bazitpur, Iswarganj, Durgapur and Fulpur in the Mymensing district; and in the *Behar* circle to the whole of the Patna district.

(3) That the areas, in addition to those of former years, which had been *thoroughly protected* at the close of the season 1884-85 were—In the *Ranchi* circle, thanna Para in the Manbhum district and parts of the Palamow Sub-division in Lohardugga; in the *Eastern Bengal* circle, the districts of Tipperah and Pubna; and in the *Orissa* circle, thannas Jajipur and Dharmsala in the Cuttack district.

Source and character of Humanized Lymph.

205. This lymph, which was received from all the vaccination circles, and from England, was distributed by this office to the Municipalities, Dispensaries, &c., but not to a very large extent. Generally it was subordinated to bovine lymph, and supplied when special requisitions were made for it, or when bovine lymph repeatedly failed. In this way 1,543 tubes of it were distributed, against 2,743 tubes of bovine lymph. In *Calcutta* it was used to a limited extent, the majority of the operations being carried out with animal virus. The lymph used in the whole of the *Metropolitan* circles was that which had been established in the beginning of the season from calf lymph. The *Orissa* circle appears to have commenced operations with English lymph, and to have continued to use it whenever required, as it is said to have kept in good condition throughout the working season, but calf lymph was also used at Cuttack at the beginning of the season. In all the rest of the Circles humanized lymph was employed as usual. The character of the virus was, on the whole, good throughout and the vesicles typical. Crusts were used in some places in the *Eastern Bengal* circle and in the Chatra and Kandi towns, for no assigned reason, and in the *Balasore* town, because the people have a strong prejudice against arm-to-arm vaccination. In the *Behar* circle in most of the operations carried on by the Licensed vaccinators, lymph in glasses was used, indicating that the Superintendent cannot carry on arm-to-arm vaccination in his Circle. Lymph is now stored and supplied in capillary tubes of Husband's pattern manufactured in the Government Medical Store Department.

Bovine Lymph—number of Operations performed, with results.

206. The subjoined statement shows the number of vaccinations which were performed with bovine lymph during the year under review in the several Vaccination Circles and in 26 of the Municipalities, and the results which were realized. From it are eliminated those areas in which the first attempts to vaccinate with the virus having failed, further trials were abandoned, and those in which the operations were conducted on a scale so small that non success was more than a probable contingency:—

Virus.	Circles.	Total number vaccinated.	Primary.		Re-vaccination.		Percentage of successful cases to total vaccinated.	
			Number vaccinated	Number successfully vaccinated.	Number re-vaccinated.	Number successfully re-vaccinated.	Primary.	Re-vaccination.
Direct from Calf.	Calcutta	2,843	2,327	2,254	516	34	96·00	6·58
	Calcutta Central depôt. At depôt	2,403	799	628	1,694	695	78·72	43·32
	Calcutta Central depôt. At houses of the people	2,357	254	222	2,103	1,288	87·40	61·24
	Total ...	7,603	3,380	3,084	4,223	2,017	91·16	47·76
With Calf Lymph in tubes.	Orissa Circle	939	939	784	...	....	83·49	......
	Ranchi "	244	244	106	......	......	43·44	......
	Total ...	1,183	1,183	890	......	... ..	75·23	......
By Arm-to-arm transmission of bovine lymph.	Calcutta	13,112	11,093	10,637	2,019	249	95·88	12·33
	Metropolitan Circles ...	3,66,139	3,65,781	3,64,897	358	208	99·79	58·75
	Suburbs of Calcutta ...	15,021	11,339	10,640	3,682	1,467	98·83	46·92
	Eastern Bengal Circle ...	3,083	3,083	3,039	......	......	98·57	
	Sonthal Pergunnahs Circle	23,165	23,165	20,135	......	......	99·87	......
	Total ...	4,20,520	4,14,461	4,12,348	6,059	1,924	99·49	31·75
	Total of Vaccination Circles	4,29,306	4,19,024	4,16,322	10,282	3,911	99·35	38·32
	In 26 Municipalities	7,803	7,654	7,161	149	73	93·55	48·99
	Grand Total .	4,37,109	4,26,678	4,23,483	10,431	4,014	99·25	38·48

These figures indicate—

(1) That of 3,380 primary operations with lymph taken *direct from the Calf*, 3,084 or 91·16 per cent. of the total primary vaccinations proved successful, against 91·61 per cent. in the preceding year; the work (depôt and house vaccinations combined) in the Calcutta Central Depôt exhibiting a percentage

of 80·72 against 89·76; and the Calcutta vaccinations, conducted by the Health Officer, yielding a percentage of 96 against 96·04 in the preceding year.

(2) That with lymph *stored in Tubes* 1,183 primary operations were performed in the Orissa and Ranchi circles, which yielded a percentage of 75·23 successes.

(3) That with lymph supply established from the calf and afterwards transmitted from arm-to-arm, 414,461 persons were vaccinated primarily in five Vaccination Circles, of whom 412,348, or at 99·49 per cent. were successfully operated on, the variations in percentages lying between 93·83 in the Suburbs of Calcutta and 99·87 in the Sonthal Pergunnahs.

(4) That in the 26 Municipalities 7,654 operations were conducted, which resulted in 7,161 successes, or at the rate of 93·55 per cent. of the number vaccinated. Examining the detailed statement (*vide* Appendix V to this Report), of which the above table is an abstract, it is seen that the maximum percentage is 99·90 in Serampore, with 1,056 successes in 1,057 operations, and the minimum 6·81 in Tumlook, with three successes in 44 operations.

(5) That the percentages of re-vaccinations varied, ranging from 61·24 in the Calcutta Central Depôt with lymph direct from the calf to 12·33 with arm-to-arm transmission of bovine lymph, excluding Calcutta where the proportion stood at only 6·58 per cent.

(6) That on the whole an aggregate of 437,109 persons were vaccinated, 426,678 primarily and 10,431 secondarily, the former operations terminating in 423,483 successes, or at the rate of 99·25 per cent., and the latter in 4,014 successes, or at 38·48 per cent.

The results obtained by employing bovine lymph in tubes, in comparison with that achieved by transmitting the same virus by the arm-to-arm process and that realized by operating with bovine lymph in the latter manner in comparison with that attained with humanized lymph used in the same way, are presented in the following abstract:—

	Percentage of Successful Cases to Total Vaccinated.							
	With Lymph in Tubes.				By the Arm-to-arm Process.			
	Primary.		Re-vaccination.		Primary.		Re-vaccination.	
	Bovine.	Humanized.	Bovine.	Humanized.	Bovine.	Humanized.	Bovine.	Humanized.
In the Vaccination Circles ..	75·23	... .	... .	.....	99·49	99·10	31·75	73·30
In the 26 Municipalities	81·16	... ..	48·95	.....	96·16	92·79	49·05	70·93

207. I submit that these Statistics indicate that, on the whole, the results realized, as shown by the percentages of success, are very satisfactory, excepting those obtained by the employment of bovine lymph stored in tubes. The chief difficulty connected with this class of virus is that in passing into the tube a little serum of blood goes with it, squeezed from the vesicle on the calf by the forceps which it is necessary to use, and this is apt to bring about speedy deterioration during transit. The observations of Dr. Ghose, who officiated as Superintendent of Vaccination, Metropolitan Circles, during the year, which will be submitted presently, contain valuable suggestions on this subject. The remarks of the Medical Officers who undertook operations with stored bovine lymph during the year, a *resumé* of which is subjoined, contain both favourable and adverse opinions on the subject; but it will be noticed that the balance of the evidence indicates that if tube lymph is not superior, it is at all events equal in operative power to humanized lymph, apart from the important fact that the former can be made available at all times. I will only add to these observations that the reports show that even in operations conducted during the year with humanized lymph, the number of non-successes was more than usually large.

Results, on the whole, satisfactory.

Dr. Ghose's observation on the employment of Stored Lymph.

208. "It has been frequently complained by people who had bovine lymph sent out to them, that operations done with them did not succeed. Monsieur Despeissis, who took a vaccinated calf from this depôt to the Mauritius, propagating the lymph from calf to calf on the voyage, and who has established an institution there similar to our Calcutta depôt, also writes to say that when he vaccinates direct from the calf it invariably succeeds; but when he sends the lymph in tubes to any out-station, success is rarely obtained. This is due, I believe, to the fact that however carefully lymph may be collected and stored, the act of squeezing the skin of the calf with a pair of forceps sends a little serum of blood into the tube. When this is the case, the serum decomposes and the virus dies. It is therefore necessary to select the tube before operating with it. Any tube that is thus spoilt becomes whitish instead of being transparent, and when opened the contents will come out like a thread. If such tubes are rejected success can be ensured. During the year I made careful observations on this subject to see if the forceps could be dispensed with, or if by superficial insertion of the lymph the vesicles could be made superficial enough to draw out the virus by a mere puncture into a pearly drop, as is done in the human arm, and I regret to say that in the process of collecting lymph the forceps cannot be dispensed with and serum must therefore come out and get mixed with it. It is therefore a necessary evil. I tried glass slides in storing lymph with no better result. It is only a familiarity with the appearance of good lymph that will ensure success. I have noticed that the vaccinators attached to the Calf Depôt never failed with their operations; whereas the men in the Suburban vaccine stations failed in many cases, until I made them practise with the calf lymph for some time. It has been found by experience that during the last two months of the rains, from the middle of September to the middle of October, it is extremely difficult to keep up lymph in the calf. Several points fail and in many instances the whole case becomes unsuccessful. This also I believe is due to the rediness with which decomposition goes on at this season; and before the virus can be absorbed into the body, it succumbs to the decomposing influence of the weather."

Local Opinions on the Subject.

209. The following is a resumé of the opinions on the subject submitted by the local officers who employed bovine lymph during the year in conducting vaccinations.

Observations and opinions of the Superintendents of the Vaccination Circles.

210. In *Calcutta* work with bovine lymph was started from the 1st of December, and the primary operations conducted amounted to 2,327 with lymph taken direct from the calf, and 11,093 with humanized bovine virus by the arm-to-arm process. Ninety-six per cent. of the former and 95·88 per cent. of the latter proved successful. There were besides 2,535 re-vaccinations attended with 13·20 per cent. of successes. A vaccinated calf is supplied to the Corporation every day from the Central Depôt, so that vaccination is available to the whole of Calcutta all the year round Referring to the value of bovine lymph as an operating agent, Dr. O'Brien, the Superintendent, says: "As stated in last year's report the results of vaccination with the calf lymph have not been uniformly successful. At times the vesicles were very typical and almost identical with those obtained with the humanized lymph; frequently, however, they were found weak and small and ran an irregular course, and there were complete failures occasionally. The Deputy Superintendent ascribes this unfavourable result to the extreme pressure used in taking out the lymph, by which it becomes diluted with blood and serum, and it is this diluted lymph which gives rise to weak vesicles. He vaccinated some cases himself with lymph taken with very moderate pressure with better results. I myself vaccinated a few cases with lymph taken without the application of the forceps, and the result was excellent. This was, of course, a slow process and took much time, which is not suitable for vaccinating a large number of people in a station. Still I think better results would be, as a rule, obtained in vaccination from the calf, if the lymph were taken from the vesicles with the least possible pressure, instead of with the considerable pressure which is exercised when the forceps, ordinarily used, is employed. In this way the admixture of a large amount of serum would be avoided. It is difficult to

predict the protective power of each variety of lymph. As great care has been taken to make the points of insertion of the calf lymph different from those of the humanized lymph, future epidemics will enable us to decide this point more accurately than can be done at present."

Metropolitan Circles.—The work throughout the 11 districts comprising this circle was started with bovine lymph sent out in tubes in the beginning of the season, and the result was that a daily supply of humanized bovine lymph was available in every thanna before the close of September, and thus a longer vaccination season was secured. With this lymph the whole work of the year of the entire circle, amounting to 366,139 operations, were conducted. Of this number 365,781 were primary operations and 358 secondary, and 99·79 per cent. of the former and 58 75 per cent. of the latter proved successful. The observations of the Superintendent of this circle on the merits of bovine virus have been submitted above.

Suburbs of Calcutta.—Calves were sent to the Suburbs four times a week, and thereby the work was not only facilitated, but also ensured good results. It is to be regretted that a separate record of vaccinations with lymph direct from the calf was not kept here. This omission will be supplied next year. Fifteen thousand and twenty-one vaccinations with humanized bovine lymph by the arm-to-arm process were carried on, of which 11,339 were primary operations and 3,682 (mostly in the Cooly Depôts) were re-vaccinations. The former was attended with 98·35 per cent., and the latter with 46·92 per cent. of successes.

In the *Darjiling* Circle all attempts to establish vaccination with bovine lymph failed. Dr. Wood, the Superintendent. who did not conduct the operations himself, says that the virus when received by him was very dark (yellow). He is, however, not aware of the causes of want of success; but he has "no reason to suppose that four competent hands (who carried out the experiment) would not have made the virus '*take*' had it been viable. Perhaps the supplies were kept too long before being forwarded to *me*" This was, however, not the case, for as soon as the lymph is received in this office, it is distributed to those who require it. Dr. Wood adds :—"I am not myself in a position to form a favourable opinion of bovine lymph as compared with humanized lymph."

In the *Ranchi* Circle 244 vaccinations, attended with 106 successes, or at 43·44 per cent., were carried on with lymph in tubes. The Superintendent, Dr. Owen, says that in a few cases the vesicles were small and weak, but in the majority of them they were large and differed not at all, or very slightly from those obtained from humanized lymph; that great heat and local irritation were common; that higher fever than that which follows vaccination with humanized lymph was not noticed; and that the lymph rapidly deteriorates when stored in tubes, but that if used immediately after it is put in the tubes, much success is attained, as was the case in Ranchi. He believes that, whatever the merits of this lymph, it is not suited for his Circle, as the people in Chota Nagpore are not sufficiently advanced to accept vaccination with it, and its adoption would be simply adding another to the many excuses already made for refusing vaccination

In the *Sonthal Pergunnahs* Circle bovine lymph in tubes was, after having been established, transmitted by the arm-to-arm process to 23,165 cases, representing over 18 per cent. of the total work of the year, and of these cases 99·87 per cent. proved successful. The Superintendent, Assistant Surgeon Kally Prosonno Ghosal, reports that "the operations performed with bovine lymph gave highly satisfactory results. The areola produced had wider bases and distinct and deeper marks were produced "

In the *Eastern Bengal* Circle 56 persons were vaccinated with bovine lymph in tubes with seven successes and 49 failures. Nevertheless, after virus was thus established, of 3,083 operations, by the arm-to-arm process, which were conducted, 3,039 or 98·57 per cent. proved successful. Mr. Lyons, the Superintendent, says that every precaution against failure in operations with tube lymph was adopted, "but to no effect ;" that the lymph in the majority of the tubes came out stringy ; and that he has no doubt in his mind that "humanized lymph in tubes is superior to bovine lymph in tubes"

In the *Orissa* Circle five calves and 33 persons were vaccinated by the Superintendent, Mr. P. Veeriah Naidu, with bovine lymph in tubes sent from this office, and the operations on four of the calves and on 29 persons proved

successful. After this, the lymph obtained from the calves and stored in tubes, was distributed to the vaccinators, who performed 939 operations with it, of which 784 or 83·49 per cent. proved successful. Evidently the lymph was allowed to die out, and no use was made of the virus from the 33 persons who were vaccinated with lymph direct from the calf. Had this been done, a much larger number of persons would have been protected with this virus, as was the case in the other Circles. The Superintendent reports that in every case the vesicles raised from this lymph were "more characteristic and typical than those obtained from humanized lymph;" but that the cause of failure was that the stored lymph was kept for a much longer period than usual, when it became coagulated, and when wanted for use it came out thready. As, however, he had established lymph locally, he had the opportunity of providing himself with fresh supplies by propagating it.

In the *Behar* Circle 14 persons were vaccinated with lymph in tubes, of which only three proved successful, and from these cases six other persons were operated on successfully; but the latter class of operations could have been easily extended if the Superintendent had taken any trouble in the matter. His report shows that in the successful cases with tube lymph the course and development of the vesicles were rather retarded, the areola forming on the ninth day, and that the fever was high in all the cases; but that after transmission the vesicles took the regular course and appeared good and typical, and better than those obtained from humanized lymph.

211. *Burdwan.*—The results in the *Burdwan* Town were not satisfactory. The Civil Surgeon, Dr. Purves, says that the virus had not been properly preserved, and in some instances it was quite dry. In the *Raniqunge* Town all the cases (number not stated) failed. The cause of failure is believed to be decomposition of the lymph during transit, and in this respect humanized lymph is said to be better than bovine when brought from a distance. In the *Chakdighee* Dispensary only one person was successfully vaccinated, and from this case others were operated on. Assistant Surgeon, Onocool Chunder Chatterjee, reports that this lymph acts in a very similar manner to humanized lymph, and that if there is any difference, the former produces more constitutional irritation than the latter, but that this may be due to the heat of the weather.

Observations and Opinions of the Medical Officers in Municipalities.

Hughli.—In the Hughli Municipality 22 persons were vaccinated, 18 successfully. Dr. Gregg, the Civil Surgeon, says that if a fresh supply of tube lymph could be easily kept up, there would be no objection to its use. From the *Serampore* Municipality a child was taken to Calcutta and vaccinated direct from the calf, after which operations were performed by the arm-to-arm process satisfactorily.

Nuddea.—In this Municipality 14 trials were made, and all proved unsuccessful. The Civil Surgeon, Dr. Russell, reports:—"It would seem that this lymph had lost its efficacy in transit. I do not think any opinion unfavourable to the employment of bovine lymph in a perfectly fresh state can be deduced from this failure It has been definitely ascertained from experiments made with bovine lymph under the auspices of the Local Government Board in England that this lymph, though very efficacious when transferred immediately from the calf to the human subject, yet must be used absolutely fresh to produce favourable (or indeed any) results, as it loses its efficacy, if kept, much more rapidly than humanized lymph does. The Committee recommend that, whenever possible, bovine lymph should be used direct from calf vesicle without delay." In connection with these observations Dr. Russell submits the following extract from the Report* on the Working of the new Animal Vaccination Establishment of the Local Government Board: "A caution is required with regard to the use of stored animal lymph. Experience seems to show that lymph from the calf is less capable of preservation than that which has passed through the human subject. * * * If stored animal lymph should come to be sought after by the general public to the exclusion of arm-to-arm vaccination, far more harm than good is likely to result from the introduction of animal lymph into this country * * * If the vaccination of human beings is to depend upon the use of animal lymph, it is necessary that this should be done direct from the calf."

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* See British Medical Journal, November 18th, 1882, pages 1015 and 1016.

In the *South Barrackpore* Municipalty 698 vaccinations with tube lymph were performed, of which 693 or 99·28 per cent. proved successful. No opinion on the value of the virus has been submitted.

Khulna.—In the *Debhatta* Town work was commenced with bovine lymph, and continued by the arm-to-arm process, resulting in 303 operations with 97·68 per cent. of successes. The same was done in the Satkhira town, but the results have not been furnished.

Of 664 vaccinations in the *Berhampore* Town, 538 (535 primary and 3 secondary) were conducted with bovine lymph, and of this number 530 were successful, the percentage being 99·07. The Assistant Surgeon Bany Madhub Bose says:—" The vesicles from the humanized lymph when genuine resembled those of the bovine, but it changed its character and type when operations were performed from too mature a vesicle. There was no such disadvantage with the bovine lymph."

Dinajpur.—Here bovine lymph was largely used, but owing to the carelessness of one of the vaccinators a separate record of results was not kept. The Civil Medical Officer, however, says that there was little difference between this and humanized lymph, both were successful and unsuccessful, but in arm-to-arm vaccination both were invariably successful.

In the charitable dispensary in *Bogra* Town two children were vaccinated with bovine lymph successfully, and the Civil Surgeon, Dr. Wilson, makes the following remarks on these cases:—(1) " That the vesicles raised by the bovine lymph were characteristic and identical with those produced by the humanized lymph. (2) That the areola was well developed on the 8th day after the operation. The irritation and inflammation was less than in humanized lymph. (3) The operation was followed by less than ordinary fever, which commenced on the 6th day." In the *Nowkilla* Dispensary in Bogra 35 operations were performed with bovine lymph, and all of them proved successful. After this, vaccination was maintained by the arm-to-arm process. The vesicles raised by the lymph are said to have been "small and weak, and consequently the crusts were out within the 14th day; but the operations performed by arm-to arm were better, as their crusts were on the points till the 18th or 19th day." The Civil Hospital Assistant, Brojo Nath Sanyal, of the *Sherpur* Dispensary in Bogra, observes:—"That the vesicles raised by bovine lymph were characteristic and identical with those produced by humanized lymph; that the areola was well developed in three out of the six operations which were performed; that the irritation and inflammation were less in two cases; and that all the cases had the ordinary fever."

In the *Pubna* Municipality the first trial in September failed. In this month the weather was too hot for either the lymph to keep well, or the vaccination to succeed. On two more attempts being made in October and November, partial success was attained, and the work of the season was commenced. Altogether 745 vaccinations were performed by the arm-to-arm process, of which 722 were primary operations, which were attended with success in 700 instances, or at the rate of 96·95 per cent. The Civil Surgeon, Dr. Dutt, says that the quality of the subsequent supplies was bad in several instances, having a " beaded appearance, reddish tinge from admixture of blood, or a dull appearance of the lymph." He is of opinion that " vaccination by tube lymph is an uncertain method, suitable only for the establishment of virus in the stations adjacent to Calcutta. Once the virus is established it has to be kept up by arm-to-arm process. This process, I believe, ultimately deteriorates the virus, and the necessity hence arises of re-establishing the virus by frequent trials. Calf lymph produces in most instances strong fever, and the vesicles make their early appearance."

Dacca.—The account from the Dacca Town is to the following effect. Of 25 primary operations performed with one small supply of bovine lymph, 21 proved successful. The vesicles rose at most of the points where it was inserted, but were smaller in size, and less inflamed than is usual with humanized lymph. Of six re-vaccinations all proved unsuccessful. Four of these were afterwards successfully operated on with lymph from human vaccinifers. In one case the man was operated on, on one arm with bovine, and on the other with humanized lymph; the former failed, while the latter succeeded. This want of uniform success was ascribed to delay in transit which caused deterioration of the lymph. With another small supply 15 primary vaccina-

tions were performed, and all were successful. Thus in all 40 operations were performed which were attended with 36 successes, or at the rate of 90 per cent.

In the *Furidpore* Town 30 operations were performed with three successes. The Civil Surgeon, Dr. Basu, says that the amount of work done with this virus was too little to enable him to form an opinion of its value; but that if any opinion was proper he should consider stored bovine lymph to be inferior to stored humanized lymph, either owing to its greater plastic properties, or greater liability to become altered by heat. In some of the tubes received by him the lymph looked clear and fluid, in others inspissated and yellowish, and in one or two there were some minute clots of blood.

Dr. Richards of *Goalundo* makes the remarkable statement that he tried bovine lymph in 10 or 12 occasions in Calcutta, but never had a successful case, though every care was taken to conduct the operation properly.

In the *Mymensing* Town no record of the operations performed was kept; but it was noticed that the success attained was not so great as with humanized lymph; that the vesicles produced by bovine lymph were small and weak and later in developing; and that persons vaccinated from these vesicles had thorough good strong ones, the secondary fever being less marked. The lymph was often found coagulated in the tubes, which had to be warmed, or a horse hair passed into them to get it out.

In the *Sudharam* (Noakhali) Town, of 13 operations only one proved successful, and on this case only one vesicle appeared and developed to completion, and corresponded with vesicles produced by humanized lymph. The failure was attributed to the lymph having deteriorated.

In the *Commillah* Town two supplies failed, but the third one received in October proved successful, and since then vaccination was freely carried on from arm-to-arm till the close of the season. Altogether 617 primary operations were performed, of which 549 or 84·85 per cent. proved successful. The Civil Surgeon, Dr. ffrench-Mullen, believes that the results obtained by using bovine lymph are better than when humanized lymph is employed, the vesicles being larger and clearer, and the subsequent marks more characteristic.

In *Darjiling* Town after several failures of operations on adults, a child was successfully vaccinated From this case arm-to-arm vaccination was carried on. Dr. Nicholson, the Civil Surgeon, reports that the vesicle in this case did not appear to differ materially from that obtained from humanized lymph, and the vaccination ran the ordinary course.

Shahabad.—Here of 78 operations which were performed in the *Arrah*, *Buxar*, *Dumraon*, *Bhabuah*,* *Dehree*, *Jugdispore* and *Sasseram* Towns (seven by Dr. Price, the Civil Surgeon at Arrah,) only 10 proved successful. Dr. Price observes:—"This want of success with bovine lymph strikes me all the more, because last year I was very favourably impressed by it, the lymph as a rule being successful, though the vesicles at first were small and the areola not marked, the vaccination from these vesicles produced excellent results." The report from Jugdispore is to the effect that there was more inflammatory action and more fever than with humanized lymph. The Assistant Surgeon of Sasseram writes:—"It was after the use of crusts [whence obtained is not stated, certainly not from this office,] that satisfactory results were obtained, so I do not think that bovine lymph was superior in value." On this statement the Civil Surgeon observes:—"My own opinion is that if the bovine lymph was originally good and could be well preserved, vaccination from it would be very much better than from humanized lymph, viz., to commence operations with; but evidently the lymph sent from Calcutta varies so much in quality that it cannot be depended on."

In the *Durbhanga* Town the first instalment of the lymph failed, but by perseverance success was attained, after which the arm-to-arm process was adopted. In all 82 operations were performed, of which 75 or 91·46 per cent. were successful. The Civil Surgeon, Dr. Shaw, states that the results in both kinds of lymph were the same. There was no difference in the size of the vesicles, nor in the appearance of the zone of inflammation. He has no facts to adduce with regard to the protective powers of bovine lymph. In the *Madhubani* Town, in the Durbhanga district, 173 persons were vaccinated,

of whom 134, or at 77·45 per cent., were successfully operated on. It is not stated how many of these had bovine lymph directly inserted, and how many received protection by the arm to-arm process. The Assistant Surgeon, Raj Coomar Coondo, says that the number operated on was too small to justify an opinion being offered as to the merits of the lymph; but that from what he had seen he found that it took with difficulty, and that it appeared to be superior to humanized lymph, the vesicles it produces being less irritable and ulcery, and there being hardly any constitutional disturbance, and no eruptions as was noticed in a few cases vaccinated with humanized lymph.

In the *Chupra*, *Sewan*, *Gopalgunge*, *Revilgunge*, *Bhori* and *Hutwa* Towns in the Sarun district 60 operations were performed, of which only seven proved successful. It was observed that at Gopalgunge the prophylactic could not be kept going by arm-to-arm vaccination with virus taken from the two successful operations with bovine lymph. The Civil Surgeon, Dr. Russell, says that in some instances the lymph received seemed clear and good in every respect, but that in others it had lost its clearness and transparency, and became thick and opaque, and sometimes it was quite dried up. He cannot account for the want of success in cases where the lymph used was clear and apparently of good quality, except on the supposition that bovine lymph does not prove as active in the Behar climate as humanized lymph In general he has observed that October is altogether unfavourable for vaccination. and that the prophylactic does not take until the close of November. On this point he writes:—"I believe that there is some peculiar condition of the atmosphere in the month of November, which militates against successful vaccination. One can understand how this should be the case from April till the middle of June, when great heat provails, and from the middle of June till the end of October, when heat and moisture are combined. It is difficult, however, to understand why really good, clear, and carefully preserved lymph should be so tardy in taking in the month of November, except on the hypothesis that there is some electric or chemical change in the atmosphere just before the setting in of the cold weather." Similar climatic effects are not, however, reported from the Behar Circle of vaccination."

In the *Monghyr* Town after the virus had been established, 40 operations were performed with only 16 successes. In the *Jamalpore* town, in the Monghyr district, the results are reported to have been unsatisfactory. Dr. Brooke notes that it was rare to get a good pustule, and that he considers the results to be obtained from humanized lymph much more satisfactory than those from bovine lymph.

In the *Bhagulpore* Town, after several failures, success was obtained, and arm-to-arm vaccination adopted. There were in all 597 operations, of which 504 were primary and 93 re-vaccinations. Of the primary operations 432 or 85·71 per cent. proved successful.

In the *Old Maldah* Town bovine lymph was tried in nine cases with five successes. Larger success could not be attained, as the quality of the lymph was not good. The Civil Hospital Assistant thinks that good bovine lymph would be more successful than humanized lymph.

In the *Dumka* Town the first supplies completely failed, the cause being according to Dr. Gupta, the Civil Surgeon, that the lymph had deteriorated before its use. In the month of February, however, with fresh supplies, 13 persons were vaccinated, all successfully. The vesicles in these cases, Dr. Gupta says, were perfectly healthy and passed through the ordinary stages of development, growth and decay, and that this clearly shows that if the bovine lymph be pure and used before it deteriorates from climatic and other causes, it succeeds just as humanized lymph in producing healthy vesicles. He continues:—"I am asked to express my opinion of the comparative value of bovine and humanized lymph. My personal experience of the value of bovine matter, as an agent of protection from small-pox, is limited. I do not, therefore, feel justified to express an opinion, so far as that opinion can be said to be based upon my personal experience; but from my own experience, taken in connection with that of others, as gathered by a careful study of the literature of the subject, I am inclined to believe as follows: (1)—That bovine lymph, if selected, and used with all the care and

precautions with which humanized lymph *is used*, offers as great a protection against small-pox as does humanized lymph. (2) That bovine lymph offers in *this country* an advantage over humanized lymph, inasmuch as it offers an unfailing source of virus for continuous and systematic operation, when humanized lymph cannot often be secured for arm-to-arm to vaccination, in consequence of great aversion on the part of parents to part with lymph from the arms of their children. This difficulty, I believe, has been felt by all medical men in this country, and this difficulty has invariably led to loss of time, interruption in the work, and incomplete protection of a selected area. The bovine lymph meets this local difficulty completely. (3) That bovine lymph offers greater protection than humanized lymph, is a proposition which does not appear to me to have been established upon sufficient grounds, and that this question must be left open for many years to come. (4) The advantage claimed in favour of bovine lymph is that it, at any rate, does not communicate human diseases. This appears to me falacious. The argument first supposes that humanized lymph does communicate human diseases, and then affirms that bovine lymph does not communicate those diseases. In the first place careful vaccination with humanized lymph does not necessarily communicate human diseases, and if it does, the chances are very small indeed, and the same can be said of bovine lymph. It may not communicate human diseases, but it has equal chance of communicating bovine diseases to men. The fact of the matter, as it appears to me, is this, that neither humanized lymph has any appreciable chance of communicating human diseases, nor bovine lymph bovine diseases; if we adopt all the necessary precautions in vaccination—(*a*) proper selection of vaccinator ; (*b*) proper selection of the vesicles from which lymph is to be taken; (*c*) purity of the lymph so taken; (*d*) cleanliness of the instrument used in operation; and (*e*) the health of the child to be vaccinated."

In the *Cuttack* Town of 39 persons vaccinated, 32 or 82·05 per cent. were successfully operated on. The Civil Hospital Assistant says that the vesicles produced by bovine lymph were more characteristic and typical than those obtained by employing humanized lymph.

Puri.—Although the lymph received in this Town was, with the exception of one supply, clear and fresh looking, of 20 operations performed with it not one succeeded. Mr. Lyons, the Civil Medical Officer, thinks that the failure is attributable to impairment of the virus by heat during transit, as the contents of the tubes were quite dry.

In the *Ranchi* Town the first supplies gave partial success, and the lymph in these cases was very gelatinous and rather dark in colour; but all the operations with subsequent supplies in February and March proved successful. The lymph this time was found to be more fluid. From the most suitable vesicles in these cases points were prepared and vaccination propagated by the arm-to-arm process. The Civil Surgeon, Dr. Wilson, says:—"I cannot say that I see any difference in the result, and there is the great disadvantage in the bovine lymph becoming gelatinous in the warm weather. The bovine lymph when humanized seems to act just as well, and the vesicle to have the same diameter as that obtained from ordinary humanized lymph."

In the *Chyebassa* Town of 15 persons vaccinated, 11 or 73 33 per cent. were successfully operated on. After this arm-to-arm vaccination was carried on, but no record was kept as to the number of the successful cases with lymph taken from the 11 cases above mentioned, as humanized lymph was also employed. The vesicles are said to have been well formed and good sized with good areola, and did not rupture or turn into sores. This lymph had, however, one drawback, viz., that it was not of uniform quality; in several tubes it had become dry or stringy. It was, however, noted that when the lymph did succeed the result was very satisfactory.

Places in which trials of Bovine Lymph entirely failed or were abandoned.

212. In the following Towns attempts made to vaccinate with bovine tube lymph to a more or less extent failed completely: Midnapore, Beauleah, Chittagong, Patna, Dinapore, Gya, Mozufferpore, Balasore, and Purulia; and in the following the first trial having failed, further attempts were abandoned: Birbhum, Jessore, City Murshidabad and Purneah.

Howrah.—This Municipality, acting under the advice of the Civil Surgeon, declined to avail itself of calf vaccination; but the Government being satisfied that the difficulties under which the Vaccination Department labours are sufficiently great, and that if its efforts in this direction are to be thwarted by Municipalities acting under the advice of Civil Surgeons, its task would be almost hopeless, and that as bovine vaccination had made considerable progress, and is no longer in the stage in which the preferences or prejudices of individual officers can be allowed to retard its general acceptance, directed that the Civil Surgeon be instructed to render the Vaccination Department all the assistance in his power. It has since been arranged that bovine vaccination shall be adopted in this Municipality.

Value of work done with Bovine Lymph.

In the Metropolitan Circles.

213. Besides supplying calves to the Calcutta Corporation and the Suburban Municipality, as already mentioned, requisitions for virus from public officers and private parties were complied with, and vaccinated calves were sent to Akyab, where animal vaccination has been established. During an outbreak of small-pox in the Baranagore Municipality, two calves were sent there, and many persons were at once vaccinated, with the result that the disease was arrested. A calf was sent to a vessel, which arrived with small-pox, and was detained off Diamond Harbour, for the vaccination of her crew. On the occurrence of small-pox in the General Hospital, all its inmates were vaccinated direct from the calf. During the recess plentiful supplies of lymph were sent to the districts in which small-pox occurred, for the purpose of vaccinating the unprotected. Such a copious supply of virus was never available during this period, when the practice of supplying humanized lymph was in vogue, and this lymph was kept up with difficulty by the arm-to-arm process. It was observed that the prejudice against calf lymph entertained by the Hindus was dying out. A large number of them attended the depôt this year for calf vaccination; native gentlemen even from the extreme end of Howrah applied for calves to vaccinate their children; and a Brahmin gentleman in Bally refused to have his child vaccinated from any other than calf lymph. Dr. Ghose, the Officiating Superintendent, made all the Deputy Superintendents under him practise vaccination on calves, and observe the character of the vesicle in its different stages. All the above shows that very useful and commendable work was done during the year. Dr. Ghose notes that his acknowledgments are due to Assistant Surgeon Jogendro Nath Bhattacharjee for the zeal and interest with which he managed the Central Depôt, and he well deserves them.

Under sanction of Government, the following modifications have been made in the working of the Bovine Vaccination institution. In future lymph will be supplied to and distributed throughout the Province. The vaccination of the Town of Calcutta and its Suburbs, and the expenses connected with it, will devolve on the Municipalities in question, the Government establishment still continuing to attend to private families in their houses, charging a fee of eight annas on each child operated on, and the cost of carrying the calf. The whole time of a Resident Assistant Surgeon being no longer required for supervising the work, it has been arranged to place the Establishment under the general supervision of the Deputy Superintendent of Vaccination in charge of the Suburbs; to employ a Resident Inspector; to reduce the number of the vaccinators from four to three, thus effecting a reduction of Rs. 59 per mensem; and to remove the Central Vaccination Depôt to the Suburbs to ensure better stabling accommodation and pasturage for the calves.

In Calcutta.

214. It is reported that in *Calcutta* the Bovine Vaccination Scheme has been a source of great convenience. It has not only lessened the difficulty hitherto felt in supplying virus to the Southern Division of the Town, but has also facilitated the carrying out of operations in the Northern Division in large numbers. The demand for calf lymph by Natives has also greatly increased, so that it is hoped that hereafter animal virus will do away with the practice of arm-to-arm vaccination—a practice objected to in many cases, both by Natives and Europeans.

WORK OF THE YEAR.

Total number of Vaccinations performed.

215. The subjoined table furnishes this information in comparison with the results of the preceding year:—

CIRCLES.	TOTAL NUMBER OF VACCINATIONS PERFORMED. In 1884-85.	In 1883-84.	DIFFERENCE IN 1884-85. Increase.	Decrease.
Calcutta	15,955	9,538	6,417	...
Metropolitan Circles	366,139	342,543	23,596	.
Bovine Vaccination Department, Calcutta	4,760	3,310	1,450	
Suburbs of Calcutta including Cooly Depôt	15,021	11,397	624	
TOTAL OF METROPOLITAN CIRCLES	385,920	360,250	25,670	.
Darjiling Circle	229,560	221,536	8,024	..
Ranchi "	148,972	146,283	2,689	...
Sonthal Pergunnahs "	123,048	106,985	16,063	..
Eastern Bengal "	397,079	351,016	46,063	.
Orissa "	46,971	52,542		5,571
Behar "	54,755	39,627	15,128	...
TOTAL OF VACCINATION CIRCLES	1,402,260	1,287,777	114,483	...
Municipalities, Dispensaries, &c.	86,036	76,865	9,171	
GRAND TOTAL	1,488,296	1,364,642	123,654	

This table shows that the aggregate number of vaccinations performed during the year under review amounted to 1,488,296 against 1,364,642 during the preceding year, and that of this number the Vaccination Circles returned 1,402,260 operations against 1,287,777 in 1883-84 and the Municipal area 86,036 against 76,865. There was thus an increase of 114,483, operations in the Vaccination Circles, and of 9,171 in the Municipal area, or an aggregate increase of 123,654 operations, indicating very considerable progress in the work of the year. To this improvement all the Circles, excepting Orissa, as well as the Municipal area, contributed. Gauged by the percentages of increase of operations performed this year over the outturn of the preceding year, the Circles which exhibited improvement rank in the order of merit assigned to them in the margin. Distributing the Municipal work to the Vaccination Circles, within the area of which the institutions are respectively located, the following results are obtained.

	Excess percentage of operations in 1884-85.
Calcutta	40·21
Behar Circle	27·62
Sonthal Pergunnahs "	13·05
Eastern Bengal "	11·60
Metropolitan "	6·65
Darjiling "	3·19
Ranchi "	1·80

CIRCLES.	Total number of Vaccinations.	PRIMARY VACCINATIONS. Total.	Number successfully vaccinated.	Percentage of successful operations.	RE-VACCINATIONS. Total.	Number successfully vaccinated.	Percentage of successful operations.
Metropolitan	418,238	409,833	406,860	99·57	8,405	4,089	54·89
Darjiling	234,453	234,180	231,750	99·68	273	207	76·05
Ranchi	150,966	150,879	146,357	99·03	87	53	63·85
Sonthal Pergunnahs	132,310	131,749	130,591	99·89	561	374	68·00
Eastern Bengal	409,706	409,364	407,507	99·91	342	251	76·73
Orissa	51,367	51,240	49,396	96·91	127	65	53·55
Behar	75,301	74,837	71,773	97·31	464	184	54·47

The reduction of work in the *Orissa* Circle is attributed to "the Balasore and Puri districts having been excluded from the areas selected this year, and also to vaccine operations having been stopped during the middle of the season in the areas selected, viz., Juggutsingpur and Tirtol thannahs of the Cuttack district, owing to an outbreak of cholera." It may, however, be noted that the work of one vaccinator in this circle for February and March was not furnished, and does not, therefore, find a place in the summary of the year. The advance made in *Calcutta* was due to a larger establishment having been at work, and to vaccinations having been carried out throughout the year. The substantial improvement seen in the work of the *Metropolitan* Circles was effected in the face of the facts that work which had commenced in the Burdwan, Nuddea, Birbhum and Murshidabad districts had to be abandoned owing to the distress which prevailed in those districts from failure of crops, and that great difficulties had to be contended with in carrying on work with a disorganized establishment in the Suburbs of Calcutta, reference to which has already been made, as well as in the Vaccination Circle, which will be alluded to in a subsequent portion of this Section of the Report. The action which

materially helped to produce a good outturn of work was the early establishment of lymph, which enabled the season's work to be begun at its very outset. The observations made above relating to disorganization of establishment and early commencement of operations, also apply to the *Ranchi* Circle, *vide* paragraph 180 of this Report. Here, however, there was a decrease in the number of vaccinations accomplished by the Government vaccinators to the extent of 2,892 operations. This is wholly due to the resignation of an entire party of vaccinators from causes also mentioned in the paragraph quoted above, whereby work was entirely stopped in the area which had been assigned to them. In the *Darjiling* Circle the increase in the number of operations was effected by the *Licensed agency*, as there was a small falling off in the number vaccinated by the *Government* agency, viz., to the extent of 826 operations. This is attributed by the Superintendent to paucity of subjects to operate on "the field having been cleared in past years," and to the presence of "fewer immigrants" in the area of work. In the *Sonthal Pergunnahs* Circle, both the Government and licensed agencies contributed to the enhanced work of the year, the former to a much greater extent than the latter. But some portion of the increase in the number of operations must have been caused by work having been carried on largely during the recess to suppress outbreaks of small-pox in the Sonthal Pergunnahs, Bhagulpore and Monghyr districts. At any rate the present Superintendent, Assistant Surgeon Kally Prosonno Ghosal, appears to have exerted himself more than his predecessor. In the *Eastern Bengal* Circle also both agencies produced the improvement, particularly the Licensed. The increase in the work of the Government agency is ascribed by the Superintendent to "the moral characteristics of the people among whom the vaccinators worked, as also (but in a subordinate sense) to the zeal of the men employed," and in that of the Licensed agency to the extension of operations in the Mymensing district. It should be mentioned here that the returns of 6,891 operations by Licensed vaccinators were received after the March returns had been closed and the year's summaries made. These figures will be included in next year's report. The improvement seen in the work of the *Behar* Circle was entirely due to the extension of the Licensed system to the Patna district, whereby 83 additional vaccinators (Licensed) were in the field of operations and produced 17,020 vaccinations, for the Government staff, of the same strength as in the preceding year, returned reduced work, the decrement being represented by 1,892 operations. The reasons assigned by the Superintendent for this reduction are:—(1) That a fresh field was taken up for operations in Shahabad, in which great opposition to vaccination had to be contended with, the people being impressed with the belief that a tax would be imposed in connection with vaccination as has been done for water supplied from the irrigation canal which was in the beginning given gratis; and (2) that the interference of inoculators was very great, alleged to have been due to the Magistrate of Shahabad having passed an order on the application of the malis or inoculators, that they shall be permitted to vaccinate the people, and that the Police should not interfere with their work. The consequence was that the inoculators obtained a copy of this order and exhibiting it to the people induced them not to have themselves vaccinated by the Government vaccinators. It appears that as far as could be ascertained these inoculators worked in 129 villages in thannahs Arrah, Belowti, Buxar, Doomraon, Peroo, and Dhangaon in Shahabad, where the Government vaccinators were also at work, and that no less than 42 of them were practising inoculation under cover of their licenses, even in thannahs Arrah and Belowti, where the prohibitory law is in force. Some of them were prosecuted, but the majority of them could not be detected, mostly because they plied their trade among rich families, and the matter was kept secret. This order of the Magistrate is most unfortunate, as it has had the effect of thwarting the efforts of the Government vaccinators to protect the country. I have asked the Magistrate to furnish me with a copy of his order, and will submit the case specially for the orders of Government. *Suburbs of Calcutta.*—It has been usual to include the vaccinations performed in the Cooly Depôts at Sealdah and Entally, this year amounting to 4,257 against 4,246 in the preceding year, with the figures of the Suburbs of Calcutta; but Dr. Ghose, the Officiating Superintendent of Vaccination, Metropolitan Circles, points out that it is not advisable to do so,

because the coolies do not form any part of the population of the Suburbs, and the protection given to them does not, properly speaking, signify protection to the population shown in the census tables as appertaining to the Suburbs. In illustration of this fact, he notes that in 1883-84 protection was stated to have been given to 44·51 per 1,000 of the Suburban population; but as the operations in the Cooly Depôts amounted to more than one-fourth of the whole work, the value of the above proportion is vitiated by 11 per 1,000. The Officiating Superintendent also reported that on examining the registers he found that of the 10,151 operations returned in 1883-84, as having been performed in the Suburbs of Calcutta, 1,604 could not be found in them. With reference to this discrepancy, Dr. Gupta, on rejoining his office, explained that the cause of not finding the operations entered in the registers is that some of the old vaccinators who had been dismissed did not make over their books to the vaccinators, who were appointed in their places, and that two registers of the Alipore and Russa Jails had not been compared by Dr. Ghose. These he forwarded, and they show 646 vaccinations. Another register, he says, in which, according to the *notes* of the Town Inspector, the balance 1,158 cases were entered, and which register was kept up by an Inspector, was seized along with other household papers by the Police when the Inspector in question was charged with a criminal offence. The explanation is not quite satisfactory.

Increase or Decrease of Vaccination in the Municipalities.

216. The subjoined table indicates, on the one hand, those Municipalities in which progress in vaccination had been effected, and, on the other hand, those in which reductions in operations had occurred:—

MUNICIPALITIES WHICH EXHIBITED IMPROVEMENT.			MUNICIPALITIES WHICH EXHIBITED REDUCTION.		
Districts.	Total number of the Municipalities, &c., in the districts.	Increase as compared with 1883-84.	Districts.	Total number of the Municipalities, &c., in the districts.	Decrease as compared with 1883-84.
24-Pergunnahs	16	3,530	Tipperah	3	1,897
Midnapore	6	3,347	Patna	5	1,687
Dacca	3	2,080	Faridpore	5	1,508
Monghyr	3	1,697	Gya	6	1,440
Pubna	2	1,673	Howrah	2	801
Cuttack	8	1,609	Murshidabad	4	638
Balasore	1	1,097	Sarun	6	615
Khulna	4	875	Noakholi	2	490
Mymensing	8	810	Chittagong	3	469
Southal Pergunnahs	4	527	Hughli including Serampore ...	8	414
Rajshahye	3	447	Chumparun	6	330
Bhagulpur	2	429	Darjiling	2	271
Backergunge	5	391	Burdwan	6	229
Bankura...	2	362	Maldah	3	224
Bogra	4	321	Shahabad	8	100
Manbhum	4	302	Puri	1	90
Jessore	4	259	Lohardugga	3	34
Mozufferpur	5	233	Rungpore	2	28
Hazaribagh	3	205	Nuddea	9	2
Dinajpur	1	140			
Singbhum	1	67			
Julpaiguri	3	25			
Durbhanga	5	11			
Birbhum	1	8			
Purneah	1	3			

It will be seen from this table that the majority of the Municipalities, 99 out of 180 exhibit improvement in vaccination, and that the Municipalities which made the greatest progress were those located in the districts of the 24-Pergunnahs, Midnapore, Dacca, Monghyr, Pubna, Cuttack and Balasore. This advancement is traceable, in the first place, to the action of the Compulsory Vaccination Act, which will be explained in the portion of this Section of the Report dealing with the working of this enactment; in the second place, to the supervision of vaccinations in Municipalities other than those in the Sudder Stations having been vested in the Superintendents of Vaccination, by which the work was not only better supervised, but operations were also carried on in a larger number of these institutions during 1884-85 than during the preceding year, the increase being 35; and, in the third place, to several of the Civil Surgeons having evinced much care and attention when inspecting the work of the vaccinators, which induced them to be more active in the performance of their work. In the *Dacca* town the great increase in the number of operations (more than double that of

the preceding year) was attributed to the vaccinators being paid by results, and to their being permitted to find subjects for operation in any part of the town instead of, as in former years, in portions which had been assigned to each vaccinator, and also to the presence of a small-pox epidemic, which drove the people to resort to the prophylactic in large numbers.

On the other hand, the Municipalities which exhibited the largest reductions in operations were those in the Tipperah, Patna, Farridpore, Gya, Howrah, Murshidabad and Sarun districts. The causes of the depreciation briefly stated are—Employment of vaccinators for short periods, one, two, or three months at most, which by lessening the duration of the vaccinating season precludes a larger amount of work being done; failure of first supplies of lymph retarding the commencement of operations; presence of sickness suspending work; objection to part with lymph from the arm resulting in want of vaccinifers; inexperience, apathy, neglect of vaccinators, decrease or change in their number; close examination of the work of the vaccinators by Inspecting Officers preventing them from showing up more work than is actually performed; the Compulsory Vaccination Act allowing a limit of 12 months for vaccination, so that children born within that period cannot be operated on, if the parents are unwilling, which they generally are, &c. I should mention here that the work done in outlying Dispensaries is nominal, for the Civil Hospital Assistants or others in charge of these institutions cannot go about seeking for subjects to operate upon, and therefore operate only on children brought to the Dispensary at the wish or option of their parents or guardians. The inspections of the operations are also materially interfered with, as the children are rarely brought to the dispensary for this purpose.

Vaccination in the Port of Calcutta.

217. As usual the crews of the Maldive boats and Arab buglas were vaccinated, and an attempt was made to afford protection to lascar crews arriving in Port, it having been reported that small-pox is of frequent occurrence among them after leaving London. Vaccination returns of seamen operated in the Port of Calcutta are not submitted, it not being feasible to do so, as with such a shifting population as that in the Port it will always be difficult to get the results of vaccine operations, especially under the provisions of the present Vaccination Act, which allows a limit of 15 days within which the notices served may be complied with. Before the expiration of the time many vessels will have left, or the crews dispersed, or those who have been vaccinated have proceeded to sea before the result could be known. In illustration of this fact the Health Officer reports that between the 4th of March and the 28th of May he served 362 notices to the crews of 17 vessels, of whom only 141 submitted to the operation. These vessels were in Port from 3 to 14 days; in two cases 17 days; in one case 18 days, and in one case 21 days.

218. *Primary and Secondary Operations during* 1884-85.

	Number of operations.												Difference in 1884-85.			
	1884-85.						1883-84.									
	Primary.			Secondary.			Primary.			Secondary.			Primary.		Secondary.	
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.*	Total.	Increase.	Decrease.	Increase.	Decrease.
Calcutta	7,103	6,227	13,420	1,925	610	2,535	4,629	3,728	8,357	943	238	1,181	5,063	...	1,354	......
Metropolitan Circles	1,89,072	1,76,709	3,65,781	240	118	358	1,76,886	1,65,566	3,42,452	59	32	91	23,329	...	267	......
Bovine Vaccination Department, Calcutta.	......	......	1,053*	...	...	3,707	......	......	925	...	...	2,385	128	...	1,322	......
Suburbs of Calcutta	6,017	5,322	11,339	2,018	1,664	3,682	5,610	4,420	10,030	2,905	1,462	4,307	1,309	...	...	625
Total of Metropolitan Circles.	1,95,089	1,82,031	3,78,173	2,258	1,782	7,747	1,82,496	1,69,986	3,53,407	2,964	1,494	6,043	24,766	...	904	......
Darjiling Circle ...	1,19,015	1,10,491	2,29,506	34	20	54	1,15,836	1,05,693	2,21,529	3	4	7	7,977	...	47	......
Ranchi " ...	76,284	72 679	1,48,963	9	...	9	73,684	70,875	1,44,559	917	807	1,724	4,404	...	...	1,715
Sonthal Pergunnahs " ...	62,418	60,438	1,22,856	96	96	192	53,974	51,979	1,05,953	523	509	1,032	16,903	...	...	840
Eastern Bengal " ...	2,04,399	1,92,680	3,97,079	...	...	......	1,80,604	1,70,359	3,50,963	31	22	53	46,116	...	...	53
Orissa " .	25 961	20,990	46,951	6	14	20	28,242	24,187	52,429	62	51	113	......	5,478	...	93
Behar " ...	28,497	26,153	54,650	58	47	105	19,680	19,745	39,425	116	86	202	15,225	...	...	97
Total of Vaccination Circles.	7,18,856	6,71,689	13,91,508	4,386	2,569	10,682	6,59,145	6,16,552	12,76,622	5,559	3,211	11,155	1,14,076	...	...	493
Municipalities and Dispensaries.	47,026	36,879	83,904	1,398	734	2,132	41.924	32,898	74,822	1,430	613	2,043	9,082	...	89	......
Grand Total ...	7,65,881	7,08,568	14,75,502	5,784	3,303	12,794	7,01,069	6,49,430	13,51,444	6,989	3,824	13,198	1,24,058	...	...	404

* Particulars according to Sex of these operations cannot be furnished as no record was kept of them.

Coincident with the progress in total vaccination, there was an increment in the number of the primary vaccinations, amounting to 124,058 operations, which was shared by the Vaccination Circles to the extent of 114,976 operations and the Municipal area by 9,082 operations, Orissa alone exhibiting a decrease of 5,478 operations In re-vaccinations there was on the whole a diminution of 404 operations. The largest decrease is seen to have occurred in the Ranchi circle, which, however, was balanced to a considerable extent by increase in Calcutta, due, the Superintendent says, to a larger establishment having been at work, for reasons explained in a preceding portion of this Section.

219. *Rates of success in Primary and Secondary operations.*

	Number of successful vaccinations.				Ratio per cent. of successful cases.			
	In 1884-85.		In 1883-84.		In 1884-85.		In 1883-84.	
	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.	Primary.	Secondary.
Calcutta	12,871	283	8,305	191	98·58	13·20	99·37	16·16
Metropolitan Circles	3,64,897	208	3,41,790	29	99 79	58·75	99·83	82·22
Bovine Vaccination Department, Calcutta	850	1,983	844	1,132	92·89	59·90	97·26	73·07
Suburbs of Calcutta	10,640	1,467	9,964	1,228	98·33	46 92	99·74	32·24
Total Metropolitan Circles ...	3,76,387	3,658	3,52,598	2,389	99 73	53·87	99·82	32·24
Darjiling Circle	2,27,067	27	2,19,090	7	99·90	50·	99 68	100·
Ranchi "	1,44,600	0	1,32,821	1,691	99 12	100·	92·72	98 48
Sonthal Pergunnahs "	1,22,036	133	1,05,541	550	99·61	73·07	99·67	56·70
Eastern Bengal "	3,06,762	......	3,50,132	37	99 93	......	99·83	69·81
Orissa "	45,917	29	51,418	113	98·23	100·	98·18	100·
Behar "	53,968	33	38,839	25	99·25	82·03	98·94	12·56
Total of Vaccination Circles	13,79,608	4,163	12,58,744	5,003	99·66	44·75	98·89	51 75
Municipalities, Dispensaries, &c. ..	77,497	1,326	66,953	1.104	94·72	63·75	94·60	56 67
Grand Total ...	14,57,105	5,489	13,25,697	6,107	99·38	48·22	98·06	52·58

From this table it is seen that in primary vaccinations approved rates of success were achieved by the Metropolitan, Darjiling, Eastern Bengal, Sonthal Pergunnahs, Ranchi and Behar Circles, the two last named circles exhibiting a higher standard of success than in the preceding year, and the rest slightly varying ratios. On the other hand, the Calcutta and Suburban Circles returned lower ratios. Although a slight improvement was effected in the Orissa Circle and in the Municipal area, the rates of success returned were again inferior. The cause of depreciation in primary successes in Calcutta is said to be due to the results in a large number of cases not having been ascertained; and in the Suburbs of Calcutta to closer inspection of the cases.. In the Municipal area the chief causes of low rate of success are, not trusting to the reports of the vaccinators but strictly examining the cases, and frequent failures of lymph. In several Circles the rates of success in re-vaccination are manifestly wrong. Dr. Ghose, the Officiating Superintendent of Vaccination, Metropolitan Circle, says with regard to the high percentage of success in re-vaccinations in his Circle that, it is due to the fact that most of those who are inoculated are not actually protected, as inoculation, as practised in this country, very often gave a spurious sore, which was taken for successful inoculation.

220. *Average number of Operations performed by each Vaccinator.*

Circles.	Number of Vaccinators.		Number of operations per man.		Difference in 1884-85.	
	1884-85.	1883-84.	1884-85.	1883-84.	Increase.	Decrease.
Calcutta	19	11	839	867	.. ...	28
Metropolitan Circles	343	342	1,070	1,001	69	......
Bovine Vaccination Department, Calcutta	3	4	1,537	827	760	......
Suburbs of Calcutta	12	10	1,251	1,439	.. ...	188
Total of Metropolitan Circles ...	358	350	1,078	1,012	66	.... .
Darjiling Circle	180	189	1,275	1,172	103	. ..
Ranchi "	201	222	741	659	82	. .
Sonthal Pergunnahs "	142	118	859	907	.. ...	48
Eastern Bengal "	329	298	1,206	1,178	28	......
Orissa "	30	29	1,565	1,812	....	247
Behar "	140	58	391	683	......	292
Total of Vaccination Circles ...	1,399	1,281	1,002	1,005	......	3
Municipalities, Dispensaries, &c....	240	224	358	343	15	.... .
Grand Total ...	1,639	1,505	908	907	1	......

The figures in this table indicate increased energy on the part of the vaccinators of the Darjiling, Ranchi, Metropolitan and Eastern Bengal Circles, as well as of the Municipal area as a whole, as opposed to a decline in the work of the operators in the Behar and Orissa Circles, in the Suburbs of Calcutta, in the Sonthal Pergunnahs Circle, and in Calcutta in the order mentioned.

221. *Comparative Amount and Value of Work performed by the Government and Licensed Agencies during* 1884-85.

Agencies	Circles in which employed.	Number of Vaccinators employed.	Total number Vaccinated during the year.	Primary Vaccination.					Re-vaccination.					Percentage of successful cases.		Average number of Persons vaccinated by each Vaccinator.	Proportion of Persons successfully Vaccinated per 1,000 of Population.
				Total.	Successful.				Total.	Successful.							
					Under one year.	One year and under six years.	Above six years.	Total at all ages.		Under one year.	One year and under six years.	Above six years.	Total at all ages.	Primary.	Re-vaccinations.		
Licensed.	Metropolitan, Darjiling, Eastern Bengal, Behar, Sonthal Pergunnahs, Orissa and Ranchi	1,067	976,226	975,633	156,516	678,314	135,820	970,650	593	...	39	324	363	99·73	62·69	915	20·31
Government.	Calcutta, Suburbs of Calcutta, Darjiling, Eastern Bengal, Behar, Sonthal Pergunnahs, Orissa and Ranchi	329	421,274	414,912	42,816	248,907	116,385	408,108	6,362	...	45	1,772	1,817	99·50	33·57	1,280	8·57

The above and the following *four* tables do not include the 4,760 operations performed by the Bovine Vaccination Department in Calcutta, owing to no records having been kept of particulars relating to *Age*, *Sex*, and *Class* or *Religion*.

Increase or Decrease in the Work of the Licensed agency, as compared with that of the Government agency.

In primary vaccinations	560,721	*I*
„ successful	562,542	*I*
„ infant	113,700	*I*
„ vaccinations of children ...	429,407	*I*
„ ditto of adults	19,435	*I*
„ percentage of successful cases (primary)	·23	*I*
„ number of operators	738	*I*
„ operations performed by each vaccinator	365	*D*
„ proportion of population protected	11·74	*I*

The marginal summary of the figures given in the above table again shows that (eliminating the results of re-vaccinations, which are not quite reliable, particularly those returned by the Licensed vaccinators,) gauged by the primary vaccinations, by the successful infant vaccinations, by the vaccinations of children and adults, and by the standard in the rate of successful operations, the work performed by the Licensed agency was superior to that performed by the Government agency. In point of the number of operations performed by each of them, however, they exhibited less energy in comparison with the Government men.

222. *Vaccination according to Age.*

Circles.	Total number of persons primarily vaccinated in 1884-85.	Ages of the successfully vaccinated, 1884-85.			Proportion per cent. to total primarily vaccinated in 1884-85, excluding the unknown.			Proportion per cent. to total primarily vaccinated in 1883-84.		
		Under one year.	One year and under six years.	Above six years.	Under one year.	One year and under six years.	Above six years.	Under one year.	One year and under six years.	Above six years.
Calcutta	13,420	4,720	6,027	1,215	36·22	53·05	9·30	31·00	54·73	13·64
Metropolitan Circles	3,65,781	43,032	2,54,555	67,310	11·76	69·61	18·40	9·66	68·26	21·89
Suburbs of Calcutta	11,339	1,931	7,369	1,340	17·84	68·10	12·38	14·83	67·91	16·98
Total of Metropolitan Circles ...	3,77,120	44,963	2,61,924	68,650	11·94	69·57	18·23	9·81	68·25	21·75
Darjiling Circle	2,29,506	51,612	1,58,023	17,432	22·70	69·52	7·66	22·08	67·77	9·82
Ranchi „ .. .	1,48,063	40,089	97,011	7,500	27·48	66·50	5·14	23·31	62·76	6·64
Sonthal Pergunnahs „	1,22,856	15,454	93,436	13,146	12·61	76·26	10·73	11·52	73·48	14·66
Eastern Bengal „	3,97,079	34,724	2,29,654	1,32,384	8·74	57·84	33·34	8·32	58·39	32·54
Orissa „	46,951	3,484	36,201	6,232	7·45	77·45	13·33	4·78	67·46	25·93
Behar „	54,650	4,277	44,045	5,646	7·86	81·00	10·38	8·58	81·11	9·25
Total of Vaccination Circles ...	13,90,545	1,00,332	9,27,221	2,52,205	14·40	67·02	18·23	13·08	65·70	20·11
Municipalities, Dispensaries, &c. ...	83,904	12,054	50,673	14,770	14·73	61·93	18·05	17·10	58·82	18·07
Grand Total ...	14,74,449	2,11,386	9,77,894	2,66,975	14·42	66·74	18·22	13·29	65·34	20·03

As usual, relatively, Children of one and under six years of age were the most largely protected, viz., at 67·02 per cent. on the total primary vaccinations, which amounted to 13 90,545; those above six years and Adults in the next degree (18·23 per cent.); and Infants under one year at the smallest rate (14·40 per cent.). Considering the circles individually, this feature in protection prevailed in the Metropolitan, Eastern Bengal, Orissa and Behar Circles, and also in the Municipal area but in Calcutta and its Suburbs, and in the Darjiling, Ranchi and Sonthal Pergunnahs Circles, while Children of one and under six years of age were as in the other Circles best protected, Adults ranked higher in the order of protection than Infants. Contrasted with the figures of the preceding year, improvement in the percentages of Infants and Children protected is seen to have occurred in all the Circles excepting, with regard to the former, in the Behar Circle only, and with regard to the latter in the Calcutta and Eastern Bengal Circles; but in vaccination of Adults a diminution in the percentages protected is observable in all the Circles, excepting Eastern Bengal and Behar. The causes accounting for Children of one and under six years of age being more largely protected than Infants have been furnished in my Report for the past year, and need not be recapitulated.

223. *Vaccination according to Sex during 1884-85.*

Circles.	Population.		In 1884-85.						In 1883-84.			
			Number, Vaccinated.		Proportion per cent. to total Vaccinations.		Proportion per cent. to Population.		Proportion per cent. to total Vaccinations.		Proportion per cent. to Population.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Calcutta	288,817	141,102	9,118	6,837	57·14	42·85	3·15	4·73	58·41	41·58	1·93	2·74
Metropolitan Circles ...	6,732,233	6,947,723	189,312	176,827	51 70	48·29	2 81	2·54	51·65	48·34	2·64	2·39
Suburbs of Calcutta	147,205	104 234	8,035	6,986	53·49	46·50	5 45	6·70	59·14	40·85	5·78	5·64
TOTAL OF METROPOLITAN CIRCLES.	6,879,438	7,051,957	197,347	183,813	51·77	48·22	2·86	2·66	51·95	48·04	2·71	2 49
Darjiling Circle	4,496,212	4,308,981	119,019	110,511	51·85	48·14	2·64	2·52	52·28	47·71	2·56	2·41
Ranchi ,,	2,114,897	2,143,468	76,293	72,679	51·21	48·78	3·60	3 39	50·99	49·00	3·72	3·54
Sonthal Pergunnahs ,,	2,335,560	2,365,131	62,514	60,534	50·80	49·19	2·67	2·55	50·93	49·06	2·46	2·35
Eastern Bengal ,,	5,094,754	5,125,824	204,399	192,680	51·47	48·52	4·01	3·75	51·46	48·53	3·89	3·62
Orissa ,,	1,307,171	1,342,373	25,967	21,004	55 28	44·71	1·98	1·56	51·71	48·28	3·57	3·00
Behar ,,	1,331,874	1,416,578	28,555	26,200	52·15	47·84	2·14	1·14	49·95	50·04	1·14	1·11
TOTAL OF VACCINATION CIRCLES.	23,848,723	23,958,217	723,242	674,258	51·75	48·24	3·03	2·81	51·74	48·25	2·88	2·68
Municipalities, Dispensaries, &c.	1,418,339	1,346,370	48,423	37,613	56·28	43·71	3·41	2·79	56·40	43·59	3·80	3·08
GRAND TOTAL ...	25,267,062	25,304,593	771,665	711,871	52·01	47·98	3·05	2·81	52·01	47·98	2·93	2·70

Calculated on the total number vaccinated, the proportion of males operated on exceeds that of females in every Vaccination Circle, as well as in the Municipal area, the aggregate percentages being 51·75 males against 48·24 females in the former area, 56·28 males against 43·71 females in the latter and 52·01 males against 47·98 females in both areas combined. In relation to populations, males were protected in larger proportion than females everywhere, except in Calcutta and the Suburbs; and on the whole 3·05 per cent. of the male population and 2·81 per cent. of the female received protection, the percentages in the Vaccination Circles being 3 03 males and 2·81 females, and in the Municipal area 3·41 males and 2·79 females. Contrasted with the preceding year, the percentages of both male and female operations calculated on the total number vaccinated were equal in both years. Calculated on population, there was an increase in the proportion of both sexes protected, viz, to the extent of ·12 per cent. in male population and ·11 per cent. in female population. The Circles which exhibited the most conspicuous increases and decreases in this direction were—

	Difference in proportion per cent. of Population protected.			
	Males.		Females.	
	Increase.	Decrease.	Increase.	Decrease.
Calcutta	1·22	......	1·99	......
Suburbs of Calcutta	.....	......	1·06	......
Orissa	....	1·59	......	1·44
Behar	1 00	......	......	......

224. *Vaccination according to Class or Religion.*

Circles.	Population.				Proportion per cent. in 1884-85 of each Class to total Vaccinated.				Proportion per cent. in 1884-85 of each Class to Population under each Class.				Proportion per cent. in 1883-84 of each Class to total Vaccinated.				Proportion per cent. in 1883-84 of each Class to Population under each Class.			
	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.	Christians.	Hindus.	Mahomedans.	Other races.
Calcutta	22,755	2,78,762	124,430	7,272	5·34	62·62	31·10	·85	3·75	3·58	3·98	1·88	8·55	62·03	28·81	·59	3·58	2·12	2·20	·78
Metropolitan Circles	14,839	8,969,705	4,478,037	2,17,315	·14	63·45	36·40	...	3·49	2·59	2·97	...	·17	63·80	35·81	·19	3·74	2·44	2·77	·31
Suburbs of Calcutta	4,018	149,030	96,583	878	·81	67·20	31·92	...	3·01	6·73	4·96	...	·95	70·20	28·76	...	3·33	6·75	4·28	..
Total of Metropolitan Circles	18,887	9,119,695	4,574,620	218,193	·16	63·60	36·22	...	3·38	2·65	3·01	...	·20	64·06	35·55	·19	3·65	2·52	2·80	·31
Darjiling Circle ...	1,423	3,849,661	4,986,098	28,014	·01	43·54	55·82	·61	2·45	2·59	2·56	5·06	·01	41·59	52·68	5·69	2·64	2·38	2·33	44·66
Ranchi " ...	29,859	3,419,667	189,478	609,361	·83	95·31	3·84	..	4·15	4·15	2·87	...	·68	93·43	3·19	2·67	2·60	4·37	2·85	·55
Sonthal Pergunnahs " ...	3,377	3,602,568	376,696	628,050	·08	66·45	8·12	25·33	3·19	2·21	2·81	4·06	·19	55·25	6·69	37·85	6·03	1·70	2·01	6·49
Eastern Bengal " ...	11,799	3,512,351	6,669,494	26,434	·15	27·48	72·23	·12	5·28	3·10	4·30	1·01	·02	33·24	66·56	·16	·63	3·54	3·87	15·50
Orissa " ...	1,137	2,401,938	47,844	198,625	·24	99·03	·71	..	10·11	1·93	·70	...	·20	99·33	·46	...	8·33	3·81	·81	
Behar " ...	2,245	2,524,350	221,817	40	·003	91·65	8·33	·003	·08	1·98	2·05	5·0	·005	82·83	17·15	·002	·07	1·04	1·84	5·0
Total of Vaccination Circles	91,482	28,798,992	17,200,477	1,715,989	·25	55·95	41·40	2·37	3·95	2·71	3·36	1·93	·23	56·38	38·83	4·54	2·85	2·62	3·00	3·27
Municipalities, Dispensaries, &c.	18,874	1,979,692	677,849	88,300	1·44	69·54	28·45	·55	6·59	3·02	3·61	·53	1·87	64·98	30·28	2·85	10·80	3·27	3·42	25·35
Grand Total ..	110,356	30,778,684	17,878,326	1,804,289	·32	56·74	40·65	2·27	4·44	2·73	3·37	1·86	·32	56·87	38·35	4·44	3·74	2·65	3·02	3·38

The figures in the above table indicate that, with reference to the gross numbers vaccinated, the largest proportion of the operations was performed on the Hindus (56·74 per cent.), next on Mahomedans (40·65 per cent.), third on those returned under the head of "Other races" (2·27 per cent.), and least on Christians (·32 per cent). This order prevailed in the Calcutta, Metropolitan, Ranchi, Behar, and Orissa Circles (eliminating "other races"); but in the Darjiling and Eastern Bengal Circles more Mahomedans than Hindus, in the Sonthal Pergunnahs more "Other races" than Christians and Mahomedans, and in the Municipalities more Christians than "Other races," were operated on. Relatively to populations vaccinated, the greatest protection was afforded to Christians (4·44 per cent.), next to Mahomedans (3·37 per cent.), then to Hindus (2·73 per cent.), and least to the "Other races" (1·86 per cent). The Circles taken individually show that, the Christians were better protected in the Metropolitan, Eastern Bengal, and Orissa Circles, and in the Municipal area, than in other Circles; the Hindus in the Ranchi Circle and in the Suburbs of Calcutta; the Mahomedans in Calcutta; and "Other races" in the Darjiling, Behar, and Sonthal Pergunnahs Circles. In Ranchi, however, an equal percentage of Christians to Hindus received protection. In comparing the results numerically with those of the preceding year, it is seen that of Christians an equal proportion was vaccinated, and that of Hindus and those shown under the head of "Other races" smaller numbers, represented by ·13 and 2·11 per cent., respectively, and that of Mahomedans a larger number to the extent of 2·30 per cent. were operated on. Relatively to population the results indicate an increase in the proportions of Christians, Hindus, and Mahomedans protected, with a decline in that of the "Other races", the increase being represented by ·70, ·08 and ·35 per cent. respectively, and the decrease by 1·52 per cent. In the subjoined table are shown the circles which afforded noticeably augmented or diminished protection to the several Classes of the population:

Increased protection.					Decreased protection.				
Circles.	Proportion per cent. to Population of—				Circles.	Proportion per cent. to Population of—			
	Christians.	Hindus.	Mahomedans.	Other races.		Christians.	Hindus.	Mahomedans.	Other races.
Calcutta	......	1·46	1·78	1·10	Suburbs of Calcutta	......	......	1·79	4·28
Suburbs of Calcutta	3·01	3·40	......	......	Darjiling	......	......	......	39·60
Ranchi	1·55	......	......	......	Sonthal Pergunnahs	2·84	......	......	1·58
Eastern Bengal	4·65	......	......	......	Eastern Bengal	......	......	......	13·59
Orissa	1·78	......	......	......	Orissa	......	1·88	......	......
					Municipal area	4·21	......	......	24·82

225. *Protection afforded to the number Born during the year.*

Circles.	Estimated Births at 30 per 1,000 of Population.	Number of Infants under one year who were successfully vaccinated.	Number of Infants under one year who died from all causes.	Number of Infants under one year who remained unprotected.	Proportion per cent. on number born. Of Infants who were vaccinated. 1884-85.	1883-84.	Of Infants who died.	Of Infants who remained unprotected.	Number of Children under six years who were successfully vaccinated.
Calcutta	12,996	4,720	2,723	5,544	36·38	10·93	20·95	42·65	11.656
Metropolitan Circles	410,399	43,632	35,872	331,195	10·48	8·12	8·74	80·77	297,605
Suburbs of Calcutta	7,543	1,331	2,009	3,603	25·59	20·07	26·63	47·76	9,328
Total of Metropolitan Circles ...	417,942	44,963	37,881	335,098	10·75	8·33	9·06	80·17	300,933
Darjiling Circle	265,956	51,612	14,127	200,217	19·40	18·19	5·31	75·28	209,638
Ranchi ,, ...	127,751	40,080	9,914	77,748	31·38	27·64	7·76	60·85	137,100
Sonthal Pergunnahs ,, ...	141,621	15,454	12,555	113,012	10·95	9·16	8·90	80·13	108,910
Eastern Bengal ,, ...	306,602	34,724	31,332	240,546	11·32	10·43	10·21	78·45	264,378
Orissa ,, ...	79,486	3,484	12,039	63,963	4·38	5·25	15·14	80·47	39,691
Behar ,, ...	82,464	4,277	16,046	62,131	5·18	3·19	19·46	75·35	48,331
Total of Vaccination Circles ..	1,434,208	199,332	136,617	1,098,259	13·89	12·04	9·52	76·57	1,126,637
Municipalities, Dispensaries, &c.	82,941	12,098	9,888	60,955	14·58	18·16	11·92	73·49	62,964
Grand Total	1,517.149	211.430	146,505	1,159,214	13·93	12·32	9·65	76·40	1,189,601

These figures demonstrate that of the estimated births of the year, taken at the low rate of 30 per 1,000 of Population, only 13·93 per cent. were protected by vaccination, leaving, after eliminating the loss by death, amounting to 9·65 per cent., the very large proportion of 76·40 per cent. of unprotected Infants; that in no Circle was the Birth-rate overtaken by the Infant vaccination ratio, and that with defective results throughout, the most unsatisfactory percentages of Infant protection were returned from the Orissa (4·38), Behar (5·18), Metropolitan (10·48), Sonthal Pergunnahs (10·95) and Eastern Bengal (11·32) Circles. Nevertheless, there was, it is satisfactory to find, an improvement in comparison with the results of the preceding year in the proportion of Infants vaccinated in every Circle, excepting Orissa, to the extent marginally shown in the order of progress effected, culminating, notwithstanding a decline of 3·58 per cent in the Municipal area, in an increase in Infant vaccinations to the extent of 1·61 per cent.

		Extent of increase in percentages of Infants vaccinated.
Calcutta	... ...	16·45
Suburbs of Calcutta	... ...	5·52
Ranchi	Circle ...	3·74
Metropolitan	,, ...	2·36
Behar	,, ...	1·99
Sonthal Pergunnahs	,, ...	1·79
Darjiling	,, ...	1·21
Eastern Bengal	,, ...	·89

Extending the enquiry over a longer period, viz., from 1880-81 to 1884-85, for which there are *complete* data, the following table indicates the protection afforded to the general Population, and to the number born during these four years. The population has been adjusted by adding the Births of this period at 30 per 1,000 of population and eliminating the actual number of casualties that took place during the same time. The information in this

table will be more and more useful in proportion to the length of period to which it is extended :—

Circles.	Protection afforded to the General Population.					Protected afforded to the number Born.						
	Population.	Total number of Primary and Secondary operations during the four years 1881-82 to 1884-85.	Percentage of Population Protected during the four years 1881-82 to 1884-85.	Mortality from Small-pox. Ratio of Deaths per 1,000 of population in 1881-82.	Mortality from Small-pox. Ratio of Deaths per 1,000 of population in 1884-85.	Estimated Births at 30 per 1,000 of Population during the four years 1881-82 to 1884-85.	Number of Infants under one year who were Vaccinated during the four years 1881-82 to 1884-85.	Number of Infants under one year who Died from all causes during the four years 1881-82 to 1884-85.	Number of Infants under one year who remained Unprotected at the close of 1884-85.	Proportion per cent. on number Born. Of Infants who were Vaccinated.	Proportion per cent. on number Born. Of Infants who Died.	Proportion per cent. on number Born. Of Infants who remained Unprotected at the close of 1884-85.
Calcutta	433,415	37,227	8·59	·14	·00	51,984	12,185	10,123	29,676	23·43	19·47	57·08
Metropolitan ...	15,164,271	1,459,179	9·62	·08	·07	1,789,704	153,182	143,224	1,493,298	8·56	8·00	83·43
Suburbs of Calcutta	235,079	42,397	17·98	·14	·71	30,172	6,524	7,101	16,547	21·62	23·53	54·84
Total of Metropolitan Circle	15,399,950	1,501,576	9·75	·08	·08	1,819,876	159,706	150,325	1,509,845	8·77	8·26	82·96
Darjiling	9,328,146	1,083,917	11·61	·03	·02	1,077,740	203,152	56,732	817,856	18·84	5·26	75·58
Ranchi	5,332,039	542,406	10·17	·21	·19	601,464	124,245	49,670	427,549	20·65	8·25	71·08
Sonthal Pergunnahs	5,841,571	474,051	8·14	·33	·36	600,488	51,211	43,254	566,023	7·75	6·54	85·69
Eastern Bengal	14,178,882	1,313,960	9·26	·34	·09	1,618,216	100,784	120,360	1,388,072	6·78	7·43	85·77
Orissa	5,510,228	188,977	3·42	1·15	·29	623,984	10,655	62,217	551,112	1·70	9·97	88·32
Behar	15,841,182	197,010	1·24	·19	·62	1,807,672	28,402	149,576	1,629,694	1·57	8·27	90·15
Grand Total .	71,826,413	5,340,024	7·43	·26	·24	8,261,424	699,340	642,257	6,919,827	8·46	7·77	83·76

The figures in the above table indicate that during the period under notice, on the whole, 7·43 per cent. of the Population were protected by vaccination; that the mortality from small-pox had fallen from ·26 per 1,000 of population in 1881-82 to ·24 per 1,000 in 1884-85; that the greatest degree of protection was afforded to the Population in the Suburbs of Calcutta, and the least to that in the Behar Circle; that 8·46 per cent. of the Infants born during the period had been protected; that the large proportions of 83·76 per cent. of the Births of the period remained unprotected at the close of 1884-85; and that Calcutta first, the Suburban Municipality next, the Ranchi Circle third, and the Darjiling Circle in the fourth place, excelled all the other Circles in affording protection to Infants; Behar showing the smallest amount of work performed in this direction.

226. *Degree of supervision exercised by the Inspecting Staff over the work of Vaccinators during the year* 1884-85.

1	2			3			4	5			6			7			8		
Circles.	Number of Inspecting Officers.			Number of Villages visited by—			Total number of Persons Vaccinated during 1884-85.	Number of Persons found to have been Vaccinated.			Number of Persons found to have been Successfully Vaccinated.			Proportion per cent. of Successful Cases observed by—			Proportion per cent. of Inspections to total number Vaccinated.		
	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.		Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.
Government Agency.																			
Calcutta	1	2*	..	...	...	...	15,955	762	9,811	......	747	9,690	......	98·03	98·85	...	4·77	61·49	...
Suburbs of Calcutta ...	1	2	...	All the thanahs.			15,021	3,015	7,525	... ..	2,949	6,872	......	97·81	91·32	...	20·07	50·09	...
Darjiling Circle	1	..	1	17	.	186	13,316	639	... ..	8,097	412	... ..	6,415	64·47	...	79·22	4·79	...	60·80
Ranchi Circle . ..	1	...	3	479	..	1,080	34,225	14,472	......	21,478	12,396	......	19,710	85·65	...	91·76	42·28	...	62·75
Sonthal Pergunnahs Circle	1	...	8	621		2,186	55,739	18 002	.. ...	43,925	18,004	.. ..	43,684	99·51	...	99·45	32·46	...	78·81
Eastern Bengal Circle ...	1	1	8	133	54	1,504	210,415	17,248	2,766	90,102	17,143	2,618	88,357	99·39	94·64	98·06	8·19	1·31	42·82
Orissa Circle	1	...	...	963	...	... .	46,971	24,490	......	.... .	24,185	......	......	98·67	...	...	52·13	...	...
Behar Circle	1	...	6	408	...	1,011	37,735	12,020	.. ...	20,399	11,835	......	20,152	98·46	...	99·15	31·85	..	77·90
Total ...	8	5	26	2,621	54	5,967	429,370	90,738	20,102	193,001	87,651	19,189	187,318	96·59	95·45	97·05	21·13	4·68	44·94
Licensed Agency.																			
Metropolitan Circle ...	1	4	39	543	1,929	9,066	366,139	27,026	117,239	309,349	26,908	117,040	308,532	99·56	99·83	99·73	7·38	32·02	84·48
Darjiling Circle	1	2	11	138	598	3,008	216,244	3,745	16,098	84,360	3,333	16,400	79,772	88·99	92·62	94·57	1·73	[illegible]·72	39·00
Ranchi Circle	1	1	11	479	501	3,943	114,747	13,819	11,932	78,550	13,055	11,795	75,065	94·47	98·85	95·56	12·04	10·39	68·45
Sonthal Pergunnahs Circle	1	...	5	391	..	1,939	67 310	9,680	......	49,418	9,624	......	49,015	99·42	...	99·18	14·37	...	73·41
Eastern Bengal Circle ...	...	1	5	...	298	1,133	186,664	......	19,125	59,086	... ..	19,105	57,515	...	99·89	96·36	...	10·24	31·97
Behar Circle	1	.	2	105	..	623	17,020	1,743	......	8,176	1,670	......	7,855	96·32	...	89·95	10·24	...	48·03
Total ...	5	8	73	1,648	3,321	19,802	968,130	56,613	164,994	589,529	54,599	163,406	577,254	97·47	99·03	97·91	5·78	17·04	60·89
Grand Total ...	13	13	99	4,260	3,375	25,769	1,397,500	156,751	185,096	782,530	142,250	182,595	764,572	90·74	98·54	97·70	11·21	13·24	65·99

* Includes one Assistant Superintendent.

General results of Inspection Work.

227. The above table discloses the following general results:—

(1) That 4,269 villages were visited by the Superintendents, 3,375 by the Deputy Superintendents, and 25,769 by the subordinate Inspecting Officers; and that these numbers contrasted with those of the preceding years show that 1,690 additional villages were inspected by the Superintendents and 6,369 by the subordinate Inspecting Officers, against diminution of 201 villages by the Deputy Superintendents.

(2) That numerically a larger number of Vaccinations were examined by Officers of all classes, the increase being represented by 43,918 by the Superintendents, 32,888 by the Deputy Superintendents, and 114,376 by the other Inspecting Officers.

(3) That in relation to proportion of Inspections to the total number of vaccinations, which in reality determines the merits of the Inspection Work performed, it is seen that Officers of every grade returned improved results, viz, to the extent of 2·43 per cent. of the total number vaccinated by the Superintendents of Vaccination (the percentages being 11·21 against 8·78 in 1883-84); 1·40 by the Deputy Superintendents (13·24 against 11 84), and 3·98 by the subordinate Inspecting Officers (55 99 against 52·01).

It is gratifying to find that there was generally a satisfactory improvement in Inspection Work, and I attribute this advance to the close check kept by me over the proceedings of the different officers month after month during the year. I now proceed to examine the work of each Officer, as far as the statistics and information furnished in the reports admit of this test.

Supervision Exercised by Sanitary Commissioner.

228. But, before doing so, I should mention that the orders of the Government of India, conveyed in paragraph 5 of Bengal Government letter No. 324, dated 31st January 1884, directing the Sanitary Commissioner to visit the Vaccination Circles, were observed as far as possible during the year under review. I visited during my inspection tours the Metropolitan, Darjiling, Eastern Bengal, and Orissa Circles, and personally communicated with the Superintendents of these Circles with regard to several particulars relating to Vaccination and Sanitary Work, &c., in their Circles. I have also closely scrutinized the monthly diaries of the Superintendents down to those of the Inspectors of Circles, commending good, and condemning bad work—Sanitary, Vaccination, Inspection and Registration—and pointing out the improvements that should be effected under each head. Notes of the action taken by me on these matters will be found interspersed in this Report. I am glad to be able to record that the result has been much improvement in every branch of the work. There has been a considerable increase in the number of Deaths registered, and of Vaccinations performed, *vide* paragraphs 3 and 215 of this Report; a very large amount of sanitary work has been performed by the officers of the Vaccination Department, *vide* next Section of this Report; and the inspections of the work of the subordinate by the Supervising Officers have been more close, and consequently attended with better results, as will be shown in the immediately following paragraphs. I must say, however, that this branch of the work is yet deficient in completeness.

Inspection Work in Calcutta.

229. *Superintendent Dr. J. O'Brien.*—In the hot weather, when large numbers were vaccinated in the bustees, the Superintendent made weekly Inspections of the cases, and in the cold weather he frequently saw cases in the Vaccine stations. During these visits he saw 762 operations, of which he found 747 successful. The percentage of his inspections on the total number vaccinated amounted to 4·77 against 2·99 in the preceding year, showing an increase of 1·78 per cent. Considering the large amount of other onerous duties he has to perform, the Inspection Work of Dr. O'Brien is very satisfactory; but still the small proportion of cases examined to the total indicates the necessity of having an Officer on this duty who can devote more time to it.

Deputy Superintendent—Assistant Surgeon Ram Chunder Mitter.—This officer's inspection work is represented by 46·74 per cent. of the total number vaccinated, being 4·29 per cent. in advance of the preceding year. Regarding his work the Superintendent submits the following observations: "Almost all the home and bustee vaccinations were inspected, but the station cases could not all be seen, because the date and hours of three or four stations being the same, they could not be visited every day; the attendance at the stations was very irregular, and many did not come at all, and so a large percentage had to be returned as not ascertained, and summonses or prosecutions could not be served on those who did not come, as they had given incorrect addresses, the intelligent class always avoided bringing the children back to the station for inspection during the lymph taking stage for fear of parting with the lymph; during the busiest part of the season the Deputy Superintendent is obliged to stay at home up to 8-30 A.M. to receive applications for private vaccination, and to attend to the other wants of the people, so that he could scarcely make it convenient to visit the stations, except those at his own house and at the Medical College."

Assistant Superintendent—Amirto Lall Roy, Civil Hospital Assistant.—This officer was appointed in the latter part of July. His work is represented by 14·24 per cent. of inspection of the total number vaccinated amounting to 15,955.

Inspection work in the Metropolitan Circles.

230. *Officiating Superintendent, Dr. Kristo Dhone Ghose.*—This officer visited 545 villages in the mofussil during a tour extending over 129 days, exclusive of breaks amounting to 53 days, caused by the Durga Poojah and other native festivals, and days spent in Office work. He examined a larger number of cases than were seen during the preceding year, viz., 27,026 against 25,624, yielding the percentage of inspections to total number vaccinated of 7·38, which is lower than that of 1883-84 by ·10 per cent. This slight falling off is attributed to the calculation being based on a larger number of vaccinations. In the *Suburbs of Calcutta* he visited all the thannahs and examined 3,015 operations, being 2,212 in excess of the number of the preceding year. His percentage of inspections to total number operated on in this area was 20·07, shewing an excess of 14·50 per cent. On the whole this Officer's Inspection Work is satisfactory, considering that he paid much attention to work in the large number of Municipalities which were placed under his supervision, and was engaged with me during the working season on an important sanitary enquiry in the district of the 24-Pergunnahs.

Deputy Superintendent, 1st Metropolitan Circle, Assistant Surgeon Neem Chund Gupta.—This officer visited 301 villages in the districts of 24-Pergunnahs, Jessore, and Khulna during his tour, which lasted 121 days. He inspected 11,338 vaccinations, or at 3·09 per cent. of the total vaccinations. This proportion is slightly in excess of that of the preceding year, viz., by ·39 per cent. The work performed by him is most unsatisfactory, but he is physically unfit for his present post. An account of his one month's work is sufficient to show that it is impossible to carry on vaccination with such an incapable officer. During January he was found to have spent 11 days in performing office work, when, in order not to hamper Inspecting Officers with such work, it was arranged by Dr. Ghose that all returns from the Inspectors should be sent direct to the office of the Superintendent and that all correspondence connected with the returns should take place direct with the Inspectors; to have occupied 10 days in travelling, or in making arrangements for travelling, while all the travelling actually done by him was about 40 miles by road and 120 by rail; and that during only 10 days he performed Inspection Work, and that in two thannahs of one Sub-division.

Deputy Superintendent, 2nd Metropolitan Circle, Assistant Surgeon Kasi Chunder Dutt.—This officer visited 705 villages in the districts of Birbhum, Nuddea and Murshidabad in 146 days. He inspected 38,299 operations, or 10·46 per cent. of the total work of the year, showing a decrease of ·38 per cent. He has lately been transferred to the charge of a Civil station.

Deputy Superintendent, 3rd Metropolitan Circle, Assistant Surgeon Jadub Chunder Ghose.—This Deputy Superintendent visited 250 villages in the Burdwan, Hughli, Howrah and 24-Pergunnahs districts during his tour, lasting

four months and 22 days. This number is below that of the preceding year by so much as 422. He inspected 40,168 vaccinations, being 10·97 per cent. of the total vaccinations of the year, and this proportion is in excess of that of the preceding year by ·1·54 per cent.

Deputy Superintendent, 4th Metropolitan Circle.—Two officers worked in this circle in succession (taking only the working season to account), viz., Assistant Surgeon Mohendro Lall Bose, from the 6th of October 1884 to the end of January 1885, and Assistant Surgeon Preumber Nath Mitter, from the 9th of February to the end of March 1885. The Inspection work performed by them is submitted below, the differences as compared with the preceding year being also exhibited :—

	Duration of tour.	Number of Villages inspected.	Difference.	Number of Vaccinations examined.	Difference.	Percentage of Inspections.	Difference.
	Days.						
Assistant Surgeon, Mohendro Lal Bose	90	365	95*I*	11,072	504*I*	3·02	·06*D*
Assistant Surgeon Preumber Nath Mitter	40	308	...	16,362	...	4·46	...
Total ...	130	673	403*I*	27,434	16,866*I*	7·49	4·41*I*

The work of Assistant Surgeon Preumber Nath Mitter was better than that of Assistant Surgeon Mohendro Lall Bose. The latter officer being found to be physically unfit for the active duty of supervising vaccination efficiently was transferred to the General Medical Department.

Inspectors.—Of the 39 Inspectors, the most satisfactory Inspection Work was performed by Haji Mahomed Jan Khan (99·45 per cent. of total vaccination) Jogendro Nath Ghose (98·37 per cent.), Koylash Chunder Mitter (97·63 per cent.), Ramnath Ghosal (97·62 per cent.), Haradhone Dutt (96·37 per cent.), Raghunath Chuckerbutty (96·09 per cent.), Troyluckho Nath Chuckerbutty (95·80 per cent.), Ram Chunder Chatterjee (95·79 per cent.), and Woomesh Chunder Chuckerbutty (95·76 per cent.). On the other hand, distinguished for bad work were Chooni Lall Chatterjee (62·05 per cent.), Bolye Chand Acharjia (58 51 per cent.). Saroda Prosad Banerjee 73·38 and Ram Charan Bhattacharjee (78·85 per cent.). The percentages of inspection of the rest of the Inspectors ranged between 79·4 and 94·79 per cent., and the mean percentage was 84·48.

Dr. Ghose during his inspection tour noticed that in the Midnapore district vaccination work was carried on very unsatisfactorily. The Inspectors had large jurisdictions with the work of which they could not cope. The Deputy Superintendent of this district had hitherto satisfied himself with seeing a number of vaccinated children. The vaccinators were all old inoculators and seemed to be wanting in method, and whether it was owing to their want of persuasive powers, or to obstinate resistance on the part of the people, they looked helpless in comparison to the ex-paid vaccinators employed in other districts.

Inspection Work in the Suburbs of Calcutta.

231. On the transfer of Assistant Surgeon Mohendro Lall Bose to the General Medical Department, Assistant Surgeon Preumber Nath Mitter, who was the Superintendent in this area, was promoted to the post of Deputy Superintendent of the 4th Metropolitan Circle, and Assistant Surgeon Jogendro Nath Bhattacharjea succeeded him as Deputy Superintendent of the Suburbs. There were thus two officers in charge of this area, viz., Assistant Surgeon Preumber Nath Mitter, from the 1st of October to the 8th of February, and Assistant Surgeon Jogendra Nath Bhuttacharjee, from the 9th February to the 31st of March. Both of these officers inspected the vaccinations performed in all the thannahs in the Suburbs, and the Work returned by them is exhibited below :—

	Number of cases examined.	Percentage of Inspections.	Difference.
Assistant Surgeon Preumber Nath Mitter ...	5,075	33·78	No separate data for each officer.
„ Jogendro Nath Bhuttacharjee	2,450	16·31	
Total ...	7,525	50·09	16·32*I*

The work of both the Officers is very satisfactory. Dr. Ghose reported that, before his incumbency, the vaccination work in the Suburbs was in a very

disorganized condition. This subject will be referred to in detail when dealing with the manner in which the Compulsory Vaccination Act was worked in Municipalities in a subsequent portion of this Section.

232. *Superintendent, Dr. J. J. Wood.*—This officer visited only 155 villages situated in the districts of Darjiling, Rajshahye, Bogra, Rungpore, Dinajpur, Julpaiguri and Purneah Details of his inspection work are subjoined, and the differences in comparison with the work of the preceding year are also shown—

Inspection Work in the Darjiling Circle.

	Number of Villages visited.	Difference.	Number of Vaccinations examined.	Difference.	Percentage of Inspections.	Difference.
Paid Agency ...	17	2*I*	639	598*D*	4·79	3·95*D*
Licensed „ ...	138	38*I*	3,745	52*D*	1·73	·10*D*
Total ...	155	40*I*	4,384	650*D*	1·91	36·*D*

Judged by these figures it is seen that this Superintendent performed his Inspection Work very unsatisfactorily, although during the course of the season I addressed him on the subject of his remissness in the matter. It appeared moreover from his Diaries that he failed to inspect vaccination in thanahs in several districts when marching through them. This is the second season I have had to comment unfavourably on the manner this Officer supervises the vaccination work of his Circle. The result of this neglect is that the protection of the country is not progressing, as evidenced by the frequent occurrence of small-pox in the districts.

Deputy Superintendent, Moulvi Tajumul Hossein.—This officer was out on inspection duty throughout the season. He visited 354 villages in the Purneah, Julpaiguri, Dinajpur, and Maldah districts and in the Terai sub-division of the Darjiling district, and examined 8,815 vaccinations, or at the rate of 4 07 per cent. of the total vaccinations. In comparison with the work of the preceding year, there was a diminution in the number of Villages visited of 107, in the number of Cases seen of 524, and in the percentage of Inspection of ·43 per cent. I concur in opinion with the Superintendent that this Officer "maintained his character for energy," and that " he evidently tests the cases he sees severely." Still I think that more work could have been performed by him.

Deputy Superintendent, Assistant Surgeon Norendra Nath Gupta.—This officer visited 244 villages in the Rajshahye, Rungpore and Bogra districts. The observations made with regard to the Village Inspections of the Superintendent also apply to this Officer. There was a break in his tour of 17 days, caused by his having come down to Calcutta for examination for promotion to a higher grade. He inspected 7,883 vaccinations, which yields the percentage to total number vaccinated of 3 64. In comparison with the work of the preceding year there was a diminution in the number of Villages visited of 17, in Cases seen of 2,390, and in percentage of Inspections of 1·31. It is thus seen that this Officer's work was altogether very unsatisfactory, as he had a much more populous country to deal with than the other Deputy Superintendent. His diaries also disclosed that he only visited the localities most convenient to himself, and this course of conduct seems to have been overlooked by Dr. Wood.

Head Vaccinator, Mothura Nath Sen had the supervision of the Government vaccinators who worked in the Hill portion of Darjiling. In this area, comprising thannahs Darjiling, Kurseong and Kalimpong, he visited 186 villages and inspected 8,097 cases, being at the rate of 65·60 per cent. of the total number vaccinated. This is commend able work.

Inspectors, the Superintendent ranks the Inspectors of the Licensed vaccinators in the order of merit indicated below:—

1*st.*—Chunder Coomar Mukerjee of Rungpur; 2*nd*, Sodoruddin of Rajshahye; 3*rd*, Nubiruddin of Rungpur; 4*th*; Mir Bahadoor Ali of Maldah; 5*th*; A. C. Chuckerbutty of Bogra; 6*th*, Mohima Churn Chatterjee of Purneah; 7*th*; Messiruddin of Rajshahye; 8*th*, Sherajuddin of Purneah; 9*th*, Hedayutullah of Dinajpur; 10*th*, Shakatullah of Dinajpur; and 11*th*, Mohiuddin of Julpaiguri. The last named Officer was reported as stupid and old, and has been dismissed. Numbers 9 and 10 are not so efficient as the rest, and number 9, Inspector Hedayutullah, spent nearly the whole of January in Dinajpur and

in the sudder thanah. It is evident that he was merely passing his time in the manner most convenient to himself, and that he was permitted to do so from want of supervision and attention to the matter by the Superintendent, who should have insisted on regular inspection of all the vaccinations. He has been transferred to another district.

Inspection Work in the Ranchi Circle.

233. *Superintendent Dr. W. Owen.*—This officer visited during his tour, without a break, of 167 days, 479 villages in 53 thannahs in the districts of Hazaribagh, Lohardugga and Singbhum, and in the Sirguja Political State. Eliminating 1,305 operations from his inspections, which he says were so recently performed that no opinion could be pronounced on them one way or another, his work stood as set forth in the subjoined table, the differences in comparison with that of the preceding year being also exhibited :—

	Number of Villages visited.	Difference.	Number of Cases examined.	Difference.	Percentage of Cases inspected.	Difference.
Government Agency ...	479	86*D*	14,172	7,140*I*	42·28	22·53*I*
Licensed " ...			13,819	227*D*	12·04	·92*D*
Total ...	479	86*D*	28,291	6,913*I*	18·99	4·38*I*

These figures show that a good season's work was performed, and that this was achieved in the face of the almost insurmountable difficulties referred to in a previous portion of this Report is very creditable to Dr. Owen.

Deputy Superintendent, Assistant Surgeon Prosono Coomar Dey.—This officer visited 501 villages in 14 thannahs in the Manbhum and Singbhum districts. This area was assigned to the Deputy Superintendent, and was not traversed by the Superintendent. There were breaks of several days in this officer's tour, during which he was in Calcutta for examination, or at head-quarters performing Office work. During the 181 days he was on duty he examined 11,932 operations, representing 10·39 per cent. of the total vaccinations. In comparison with the work of the preceding year there is an increase of 125 villages visited, and a decline in the number of cases inspected of 144, or of ·67 per cent. on the total operations of the year. This is not quite satisfactory. With reference to this Officer's work, the Superintendent remarks that his returns were not sent in according to rules; that some particulars were omitted in his report, such as the names of thannahs visited by him; that he appears to have spent 150 days inspecting in Manbhum in 10 thannahs, and to have seen in that time 5,506 children; whereas he spent only 28 days in four thannahs in Singhbum, and saw 6,426 children; and that consequently he could certainly have inspected more cases in Manbhum as well as in Singhbum, where the vaccinators required to be looked after very much. The neglect of the latter district is clearly due to its being rather distant from the Deputy Superintendent's head-quarters.

Inspectors and Native Superintendents.—The percentage of vaccination inspected by these Officers ranged from 44·34 to 83·14 on the total operations of the year, the mean ratio being 67·14. Many of these Officers returned unsatisfactory work from causes which it would be tedious to detail here; but the following officers were favourably mentioned by the Superintendent, Fazel Kurrim, Mahomed Lall, Bunsidhur, Mohamed Ali Khan, Behari Lall, and Chatoorbhooj Lall.

Inspection Work in the Sonthal Pergunnahs Circle.

234. *Superintendent, Assistant Surgeon Kali Prosunno Ghosal*—This officer joined his appointment on the 15th of May 1884, and from the 22nd of that month he commenced his inspection tour, which lasted up to the 31st March, with the following breaks: 1st to 3rd October 1884, employed in examining the Inspectors and Head-vaccinators in hygiene, and 29th to 31st March, engaged in preparing the Annual Report. He was actually on duty 306 days. During this period he visited 1,002 villages in 23 thannahs, in the district of Bhagulpore, Monghyr and Sonthal Pergunnahs. The details of his Inspection Work are subjoined, the table also showing the differences in comparison with the work of the preceding year. It should be stated that this comparison is made with the work of the late Deputy Superintendent, who in reality

performed the Inspection Work, the then Superintendent being unable to do so from causes already explained :—

	Number of Villages visited.	Difference.	Number of Vaccinations inspected.	Difference.	Percentage of Inspections.	Difference.
Government Agency ...	621	435*I*	18,092	11,614*I*	32·46	16·59*I*
Licensed " ...	381	73*D*	9,680	4,962*D*	14·37	7·69*I*
Total ...	1,002	362*I*	27,772	6,682*I*	22·57	2·86*I*

indicating satisfactory progress ; but it should be recollected that in the above Work is included a large number of the operations performed during the recess for the purpose of suppressing outbreaks of small-pox.

Inspectors and Head-Vaccinators.—The operations of these Officers show percentages ranging from 6·21 to 19·58. While none of these officers can be said to have performed even fairly satisfactory work, the following returned notably bad work:—Ram Churn Mukerjee (6·21 per cent. of total vaccinations), Monohar Dass (7·31 per cent.), Aughore Nath Sircar (7·72 per cent.), Uma Churn Gupto (9·12 per cent.), Bhagiruth Dass (9·67 per cent.), and Haradhon Sen (10·18 per cent.).

Inspection Work in the Eastern Bengal Circle.

235. *Superintendent, Mr. A. Lyons.*—This Officer did not begin his inspection tour before the 19th November, and no plan of inspections appears to have been laid down by him for the Deputy Superintendent. During his tour extending to 137 days, he inspected only 133 villages in seven thannahs in the districts of Tipperah and Noakholi, leaving the Licensed agency work and a part of the Government agency work to the Deputy Superintendent. Particulars regarding his work are furnished below, with the differences as compared with the preceding year. The comparison is instituted with the *total* work in 1883-84, *Government* and *Licensed*—

	Number of Villages visited.	Difference.	Number of Vaccinations examined.	Difference.	Percentage of Inspections.	Difference.
Government Agency	133	43 *D*	17,248	1,358 *D*	8·19	2·89 *I*

The work of this Superintendent is unsatisfactory, and even as set forth may be incorrect. I have been unable to check his proceedings in any way throughout the working season, as he has obstinately detained all his Diaries, except one for a few days in November. He should be removed from his present post as soon as possible.

Deputy Superintendent, Assistant Surgeon Doorga Das Roy.—This Officer appears to have been deputed in the early part of November 1884 to supervise work being done by the Government agency in Tipperah, instead of being made to look after the Licensed agency work in the areas assigned to him. He commenced work on the 16th October, and continued it up to 31st March with several breaks aggregating 48 days, and performed work during 160 days. The breaks were caused, it is said, by his proceeding to Dacca to draw his salary at the local treasury, being ignorant that he could draw it at any treasury in the Circle; but as three of these breaks extended to 14 days each, it is difficult to believe that the above was the real cause. He visited 347 villages in eight thannahs in Tipperah, one in Noakholi, two in Pubna, seven in Dacca, five in Faridpore, and two in Mymensing, so that the bulk of the Licensed vaccinations carried on in Mymensing, Pubna, Dacca and Faridpore, particularly in the two first-named districts, were left entirely without inspection. The above-named thannahs are nearly all on the banks of rivers, so that in order that he might travel in a boat for his own convenience, the Deputy Superintendent left the interior thannahs unvisited. He examined 21,891 operations, or at the rate of 5·51 per cent. of the total vaccinations, showing an increase of 4·84 over the percentage of the preceding year. The Superintendent says he is not satisfied with the Deputy Superintendent's plan of inspection, who, he thinks did not understand the position of his field of operations, and consequently the exact centres to which he should have proceeded to enable him to make a concentrated inspection, but the Superintendent apparently forgets that it was his business to have laid down the plan of proceeding.

Inspectors and Native Superintendents.—The percentages of Inspections returned by these Officers ranged from 3·87 to 9·17, so that none of these

Officers can be said to have done satisfactory work. The following observations have been made by the Superintendent on the work of these officers. Inspector Mahomed Idris performed a fair amount of work, and besides inspections he started Licensed operations in West Mymensing for the first time,—work which was beset with difficulties. This should have been done under the supervision of the Deputy Superintendent employed for the purpose of looking after the Licensed agency, and not have been left to an Inspector who was, moreover, on probation. Inspector Tomizuddin's work was insufficient, but he pleaded that he was sick, and he looked so, and he also had to start Licensed vaccination in East Mymensing. Native Superintendent Koylash Chundra Chatterjee had fallen off in his inspections. He had been promoted to his present post for good work, and the deterioration in his work was unexpected. Head-vaccinators Anand Chandra and Mohim Chandra Bhumick performed insufficient amount of inspections. The last-named officer has always returned deficient work, and he has been warned for the last time. Head-vaccinator Koylash Chandra Ghosh's inspections are greater in comparison with the preceding year, being the result of the frequent warnings he has had. They are, however, still below standard; but he had to bring up arrears, and he is constitutionally infirm. Head-vaccinator Radha Kishore Shaw (a passed pupil of the Dacca School of Medicine) returned the highest percentage of inspections, and he is an active and intelligent young man. Inspector Raj Mohun Malakar, although careful and reliable, did not attain a satisfactory standard in his inspections. Inspector Baikunt Nath Bhumick's inspections were below the expected percentage. Inspector Abdul Hamid's work was insufficient. He was, however, ill with fever and had fractured one of the bones of the fore-arm and dislocated the elbow joint. Head-vaccinator Chandra Madhub Dhur made a great advance in his inspections and his work is fairly good. Inspector Abdul Bari is zealous and active, but his work is insufficient, owing to his having lost much time in overcoming the prejudices of the Ferazis who abound in his area of work.

Inspection Work in the Orissa Circle.

236. *Superintendent, Mr. P. Veeriah Naidu.*—This officer visited 963 villages in all the 13 thanahs in the Cuttack district, and in the Khurda thanah in Puri. There were two breaks in his tour, one from the 9th to the 13th of November, during which he went to Juggutsingpur to enquire into an outbreak of Cholera there, and the other from the 27th January to the 2nd February, during which he was employed in Office work at head-quarters at the time of the Sanitary Commissioner's visit. He inspected 24,490 vaccinations or at 52·13 per cent. of the total operations of the year. Compared with the work of the preceding year, while there was an increase of 169 in the number of Villages visited, there was a decline in the percentage of Vaccinations inspected to the extent of 5·55. On the whole the Inspection work of this Superintendent was very satisfactory, and he ascribes his inability to have returned better percentage of inspections than during the preceding year to the greater portion of his time having been taken up in travelling between distant areas.

Head vaccinators.—Beyond stating that Head-vaccinator Bany Madhub Mookerjee failed to complete his Inspection duty, the Superintendent's report furnishes no account or statistical data regarding these Officers.

Inspection Work in the Behar Circle.

237. *Superintendent, Assistant Surgeon Mothura Nath Sen.*—This Officer visited 513 villages in 10 thannahs in the Shahabad and Patna districts, during his tour extending to five months and 24 days. Particulars relating to his Inspection Work are subjoined with the differences in comparison with the Work of the preceding year:—

	Number of Villages visited.	Difference.	Number of Vaccinations inspected.	Difference.	Percentage of Inspections.	Difference.
Government Agency	408	16*D*	12,020	1,226*I*	31·85	4·62*I*
Licensed „	105	.....	1,743	......	10·24	......
Total ...	513	89*I*	13,763	2,969*I*	25·13	2·20*I*

These figures show that, on the whole, progress has been made, but the Licensed agency work, which was for the first time introduced into this Circle, should have been looked after much better. If certain irregularities had not been permitted to exist in this Circle, better work would have been secured. Here the subordinate Inspecting Officers make no arrangement for the protection of the villages before the arrival of the vaccinators, the latter spend months in the same villages, again, more than one man works in the

same village, by which responsibility for bad work cannot be fixed. The thannahs in the Patna district, which were inspected this year, comprise only a small part of the district, and lie along the Railway line, and yet the Superintendent only saw 54 successful cases per diem. In explanation for not producing better work, the Superintendent submits that there were monthly breaks in his tour, caused by his having to return to head-quarters to draw the pay of the establishment, and to dispose of office work; that he had gone twice or thrice to the same areas in Shahabad owing to the people not consenting to vaccinate the children at one and the same time; that he had also to make house-to-house visitation, owing to the prejudices of the people against producing their children for inspection; and that he had to enquire into the sanitary condition of the villages, which occupied much time.

Inspectors and Native Superintendents.—The percentages of the Inspections performed by these Officers ranged between 9·95 and 29·27. Their Inspections cannot therefore be considered satisfactory. The Superintendent does not furnish any account of the work of these Officers, beyond stating that they had to spend much time in inducing those who resisted vaccination to accept it, which impeded their work to some extent.

In an outbreak of small-pox in the Town of Durbhunga, it appeared that the people were directed to take their children to the Dispensary to be vaccinated. I recommended that the vaccinator should proceed to their houses and protect the children there, and that by making proper arrangements the vaccinators can operate on the children of groups of houses, and so bring vaccination to the doors of the people. This procedure was the more necessary, as it is known that women will not take their children to Dispensaries for vaccination.

238. The reports of this year show that much attention was paid by many of the Civil Surgeons and some of the Assistant Surgeons in closely inspecting the work of the vaccinators. With regard to the Municipalities placed under the Superintendents of Vaccination, those placed under the Superintendents of the Metropolitan and Sonthal Pergunnahs Circles seemed to have received much attention in this direction, with the result that more attention was paid by the vaccinators to their duties. Close, commendable Inspection Work was performed by Assistant Surgeon Kali Prosono Chowdhry of Burdwan, Assistant Surgeon Radha Romon Ghose of Ranigunge, the Civil Surgeon and Assistant Surgeon of Bankura, Dr. Roy of Birbhum, Dr. Tomes of Midnapur, Dr. Gregg of Hughli, Dr. Beatson of Jessore, Assistant Surgeon Ackhoy Coomar Dey of City Murshidabad, Dr. Crombie of Dacca, Assistant Surgeon Anand Chundra Mookerjee of Noakholi, Dr. ffrench-Mullen of Tipperah, Dr. French of Patna, Assistant Surgeon Asder Ali Khan of Barrh, Assistant Surgeon Amulya Chunder Champati of Behar, Dr. MacLeod of Gya, Dr. Mathew of Mozufferpur, Dr. Shaw of Durbhunga, and Dr. Manook of Chaibassa.

Inspection Work in the Municipalities.

239. ***Expenditure incurred for Vaccination, and Average Cost of each successful Operation***

Circles.	Total cost in 1884-85.			Average cost of each successful case.					
				1884-85.			1883-84.		
	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Calcutta	6,627 6 8	......	6,627 6 8	0 8 1	......	0 8 1	0 9 8	......	0 9 8
Metropolitan Circles	......	37,552 12 10	37,552 12 10	......	0 1 8	0 1 8	......	0 1 9	0 1 9
Bovine Vaccination Department, Calcutta	5,021 12 11	......	5 021 12 11	1 12 4	......	1 12 4	2 3 0	......	2 3 0
Suburbs of Calcutta	4,957 15 3	......	4,957 15 3	0 6 7	......	0 6 7	0 7 0	......	0 7 0
Total of Metropolitan Circles	9,979 12 2	37,552 12 10	47,532 9 0	0 10 8	0 1 8	0 2 0	0 11 2	0 1 9	0 2 1
Darjiling Circle	1,447 6 8	23,983 8 11	25,430 15 7	0 1 11	0 1 9	0 1 10	0 1 2	0 1 9	0 1 9
Ranchi "	10,476 0 0	2,395 0 0	12,871 0 0	0 5 3	0 0 4	0 1 5	0 5 6	0 0 4	0 1 8
Sonthal Pergunnahs "	12,204 5 6	1,380 0 0	13,584 5 6	0 3 6	0 0 4	0 1 9	0 2 10	0 0 4	0 1 3
Eastern Bengal "	17,518 14 6	1,129 4 9	18,648 3 3	0 1 5	0 0 1	0 0 9	0 1 1	0 0 1	0 0 8
Orissa "	6,283 7 10	......	6,283 7 10	0 2 2	......	0 2 2	0 2 0	......	0 2 0
Behar "	9,126 3 8	612 5 2	9,768 8 10	0 4 0	0 0 7	0 2 11	0 3 5	......	0 3 5
Total of Vaccination Circles	73,663 9 0	67,082 15 8	1,40,746 8 8	0 2 10	0 1 1	0 1 8	0 2 7	0 1 2	0 1 8
Municipalities, Dispensaries, &c.	......	......	10,702 5 8	......	......	0 2 2	......	......	0 2 1
Grand Total	73,663 9 0	67,082 15 8	1,51,448 14 4	0 2 10	0 1 1	0 1 8	0 2 7	0 1 2	0 1 8

Gross Expenditure.

240. The total cost paid by Government for vaccinations performed during the year amounted to Rs. 1,40,746-8 8, and of this Expenditure Rs. 73,663-9-0 represent the cost of the operations performed by the Government vaccinators, and Rs. 67,082-15-8 that of the establishment provided by Government for supervising the operations of the Licensed vaccinators. In comparison with the amount expended during the preceding year, the Government had to meet an additional expenditure of Rs. 13,997-4-9 for vaccination during the year under review. The cost of vaccination to the Municipalities amounted to Rs. 10,702-5-8, being greater than that of 1883-84 by Rs. 1,856-10-9. Thus the entire cost of the year for vaccination—Government and Municipal—comes to Rs. 1,51,448-14-4, which is greater than the entire expenditure of the preceding year by Rs. 15,853-15-6.

Average Cost of each Successful Operation.

241. The average cost of each successful operation performed by the Government vaccinators was 2 annas and 10 pie, and that by the Licensed vaccinators 1 anna 1 pie, aggregating 1 anna and 8 for both departments. The differences, as contrasted with the average cost of the preceding year, are an increase of 3 pie per case in the operations of the Government agency, against a decrease of 1 pie per case in those by the Licensed agency, culminating in the cost per case in both years being the same. The average cost of the Municipal operations was 2 annas 2 pie each, and this cost was in excess of that of 1883-84 by 1 pie per case. On the whole the entire operations of the year cost 1 anna 8 pie per case against the same average per case in the preceding year. In the Vaccination Circles individually considered, the cost per case (excluding the Bovine Vaccination Department where it stood at 1 rupee, 12 annas and 4 pie) varied, ranging from 8 annas 1 pie in Calcutta to 9 pie in the Eastern Bengal Circle. It was lower in the Ranchi, Calcutta, Behar, Suburbs of Calcutta and Metropolitan Circles, but higher in the Sonthal Pergunnahs, Orissa, Eastern Bengal and Darjiling Circles to the extent indicated in the margin.

	Difference per case in 1884-85. A.	P.		Difference per case in 1883-84. A.	P.
Calcutta	1	7*D*	Sonthal Pergunnahs Circle		6*I*
Suburbs of Calcutta ...		5*D*	Eastern Bengal Circle		1*I*
Metropolitan Circles ...		1*D*	Orissa Circle		2*I*
Bovine Vaccination Department, Calcutta	6	8*D*	Behar Circle		6*D*
Darjiling Circle ...		1*I*			
Ranchi „ ...		3*D*			

Contributions to cost of vaccination from other sources.

242. In addition to the regular expenditure incurred for vaccinations in the Circles and Municipalities as exhibited in the table in paragraph 239, the following contributions were made in aid of the work:—

Rs. 100 for two vaccinators entertained by Government for the Angul Estate in Cuttack.

Rs. 115-2-6 paid by the Rajah of Durbhanga for one vaccinator for the Durbhunga Municipality, and one vaccinator for the Tajpore Dispensary.

Rs. 200 paid by the Rajah of Hutwa, for two vaccinators for the Hutwa Dispensary, one vaccinator for the Gopalgunj Dispensary, and one for the Bhori Dispensary.

Rs. 284-2-8 for two vaccinators for the Dhenkanal Tributary Mehals in Cuttack paid by the Rajah of the place.

Rs. 15 for one vaccinator for the Kurnafuli Tea Plantation paid by the Kurnafuli Association.

Rs. 10 paid by the Northern Bengal State Railway for a Licensed vaccinator for vaccinating the children of the Railway employés from Sara to Silliguri.

Rs. 170 paid by the East Indian Railway for vaccinating the Railway employés at the Jamalpore station.

Rs. 74-5-10 for a vaccinator for the Barakpore Cantonment paid from the Cantonment Fund.

Rs. 120 for a vaccinator for the Dinapore Cantonment paid from the Cantonment Fund.

Rs. 83 for two vaccinators for the Sursund and Tajpore Dispensaries, paid from the Dispensary Funds.

Rs. 30 being contribution for the cost of one vaccinator paid to the Puri Municipality from the Puri Lodging House Fund.

Explanations accounting for the increase in the gross and average cost of Operations.

243. *Calcutta.*—The increase in the gross cost for vaccinations is due to the entertainment of temporary and permanent establishments, the former for two months and the latter from July, for reasons already explained in this report. *Darjiling Circle.*—The increase in the gross and average cost of operations was due to the head-vaccinator's pay having been raised, and to an emergent vaccinator having been entertained for eight months, and to a portion of the pay of a peon undrawn in 1883-84 being charged to the accounts of this year. The charge for travelling allowance was also greater. *Sonthal Pergunnahs.*—In this Circle the average cost per each successful case would have been much greater, owing to the following causes, were it not that the gross cost was distributed over a much larger number of operations performed. The causes of increase in the gross cost are—the appointment of a separate Superintendent, of a clerk, and of a sweeper, and retaining an emergent staff during the recess to suppress outbreaks of small-pox in Bhagulpore and Monghyr. The total cost incurred for the latter purpose amounted to Rs. 6,084-4-5. *Eastern Bengal Circle.*—The cause of the increase in the gross and average expenditure per case is due to the appointment of a Deputy Superintendent, of two Inspectors and a peon, and to travelling charges having been greater under the Civil Travelling Allowance Code. *Orissa Circle.*—The cause of the increase in the average cost of each successful case is said to be "due to the Balasore and Puri districts having been excluded from the selected areas this year," thus decreasing the gross number of operations. *Behar Circle.*—The increase in gross expenditure is due to the pay of the Superintendent having been increased on promotion to the second grade of Assistant Surgeons, and to more vaccinators having been employed than during the preceding year.

Particulars regarding the Licensed Agency.

244. The areas, old and new, assigned to the Licensed vaccinators have been indicated in paragraphs 118-119 of this Report, and the extent and the quality of their operations in paragraph 221, where it has been shown that they performed very satisfactory work. I now add some noteworthy particulars regarding them.

In the *Metropolitan Circles* Dr. Ghose, the Officiating Superintendent of Vaccination, found that the Licensed vaccinators were not an organised body as they should be; that neither the Superintendent nor the Deputy Superintendents had any control over them; and that there was no register kept of them, nor an account of their distribution over the Circle. In fact, their appointment was in the hands of the Inspectors, which led to much abuse, the paying villages being given away for money considerations. On assuming charge of the office, Dr. Ghose endeavoured to rectify these irregularities, but the Clerks in the office could render him no assistance, and what assistance the Inspectors tendered was of a negative character, and thus the whole matter was left to be taken up next season. The only hold the office had over these men for securing punctual appearance was a security of Rs. 16 from each; but Dr. Gupta, before proceeding on furlough, sold off the Government Promissory notes in which the security money was vested, and returned the deposits to the vaccinators. Regarding the merits of the Licensed Vaccination System, Dr. Ghose writes:—"The Licensed System of operations in my experience is superior to the system of work with paid vaccinators, in so far as it ensures thorough protection. The licensed man knows that he will have to earn his livelihood from the people, and he persuades and coerces them to accept vaccination. He also knows that he will not be paid for unsuccessful cases, and therefore is careful in inserting lymph and selecting good *virus*. But its great drawback [and this calls for the consideration of Government] is that the difficulty of realizing fees is increasing. People are beginning to know that there is no law to compel them to pay the vaccinators' fees. Even if it were possible to go to a Civil Court, practically such a course could not be adopted by the vaccinators; they would have to institute hundreds of small cases for four annas and eight annas, and dance attendance at the Court to the

neglect of their work. While the vaccinator will be attending Court, his lymph would be dying out. But I doubt if any Judge would give the vaccinator a decree when the parties bring up the fact in defence that they did not want the operation, but it was forced on them." Deputy Superintendent Jadub Chunder Ghose reports that in many villages in thannah Habra, in 24-Pergunnahs, people objected to pay the vaccinators' fees, the majority being those who could afford to do so, but would not. At Autgurrah, in the 24 Pergunnahs, of 104 persons vaccinated the fee could not be realized from one. Refusal was also made in thannah Sahebgungo and Mongulcote in Burdwan.

In the *Behar* Circle the Licensed vaccinators, who were for the first time employed this year, could not write, so they entertained a man in each thannah to write up their registers and to prepare the monthly returns. This shows that the Superintendent appointed imperfectly educated men, and had not taken the trouble in previous years to get good men and train them.

Need for legalizing the position of Licensed Vaccinators.

245. In a special report, which was forwarded to Government with this office letter No. 7219, dated the 17th December 1884, Dr. Ghose suggested the advisability of inserting some clause in the Local Self-Government Bill, making the licensed vaccinators' fee realizable as a public debt by the village Unions, as he found that some of the Licensed vaccinators had not been paid their fees for September and October, and had to loiter for them in one locality, and did not therefore advance to fresh villages, thus leaving unprotected centres in various parts of the Circle which form dangerous foci from which small-pox spreads.

Connected with the subject under consideration, the Superintendent of the *Ranchi* circle says:—"Some legislation is required to punish men who vaccinate without a license or order from some recognized authority. The people being illiterate and extremely ignorant cannot understand the difference between successful and unsuccessful vaccination, hence there is great opportunity for a bad, unscrupulous man to deceive them to their great detriment, and to bring vaccination into disrepute. Further, the villagers, since inoculation has been prohibited by law, look on all vaccinators, Government or Licensed, as men sent by Government for their benefit, and hence it would be rare to find villagers asking a man by what authority he worked, and rarer still to find any one asking a vaccinator to produce his *parwana.* They would in 999 cases out of 1,000 be content with the answer that he was ordered to vaccinate their children, and that if they did not bring them, he would report them, and get them punished. He vaccinates them, takes excessive fees, and is quite unconcerned whether the cases are successful or unsuccessful. The people require to be protected from such men, and, as the law stands at present, it is inadequate to do so. Great difficulty is experienced in obtaining the services of good men. In many cases the department seems to be looked on as a *refugium peccatorum*, bad men who have been discharged from other departments coming to seek employment here. It is often impossible to find out the antecedents of men who seek employment, and it is sometimes necessary to entertain men to fill up vacancies, about whom nothing is known, and frequently it is only after they have worked for some time, that it is found they are bad and unsuited for employment. The difficulty is very great in this Circle, as nearly all the men seeking employment come from other districts—Gya, Behar, Bankura, &c. I need not point out, if this be true, how injurious it is to discipline, and how useless it is to inflict punishment on or discharge vaccinators."

Legal opinion on question as to whether Fee payable under Vaccination Act for Home vaccinations can be reduced.

246. The Civil Surgeon of Midnapore having enquired whether the fee payable for home vaccination in the rules framed under Section 33 of the Bengal Vaccination Act, could be reduced by Municipalities, if they consider it advisable to do so, the question was referred to the Superintendent and Remembrancer of Legal Affairs, and that Officer furnished the following opinion:—"Section 8 of the Act says that when a public vaccinator attends elsewhere than at a public vaccine station *for the purpose of vaccinating a child*, he should be paid a fee not exceeding *eight* annas,

such fee to be appropriated as the Lieutenant-Governor may direct. The rule referred to says that persons applying for home vaccination shall pay a fee of *four* annas *for each vaccination* (which would seem to mean each person vaccinated). Both the Act and the rule are loosely worded. Under the former the fee would seem to be payable for the *visit*, and then only when a *child* is vaccinated; while the rule requires a separate fee from *each person vaccinated.* I see no objection, however, to the Municipal Commissioners themselves paying a portion of the fees if they choose, or to their remitting a portion of the fee if (as I believe is the case) the fees are made over to them by the Lieutenant-Governor."

Training of men in Vaccination.

247. In the *Darjiling* Circle the licensed vaccinators entertain apprentices, but they are not allowed to practise independently, until they evince a competent knowledge of vaccination both in theory and practice. In the *Eastern Bengal* Circle 14 men were trained in vaccination. The Superintendent says that the great drawback with regard to these men is that they are generally illiterate and unable to write; but that they take kindly to the work and practise it with fidelity. The Superintendent should, however, have trained more men for the new areas to be placed under Licensed agency. In the *Behar* Circle 12 inoculators were trained during the year. *Orissa Circle.*—The Superintendent suggests that, should the licensed system be introduced in his Circle at the ensuing working season, 20 inoculators be trained in vaccination during the recess, or at the commencement of the next cold season on a subsistence allowance of Rs. 4 each per mensem.

The local reports do not show that more men were trained anywhere in this work. This subject must be attended to more carefully, as the Licensed System of vaccination is being extended year after year, and the need for trained Vaccinators is consequently greater.

Attitude of the people towards Vaccination. Opposition offered. Local aid rendered.

248. There is evidence in the reports of the Officers of the Vaccination Department that vaccination is appreciated in many places, and that the ignorant prejudices, mistrust, and opposition of former years are gradually giving way to a healthier view of vaccination. I will therefore indicate under this head where such conditions, which militate against the measure, still exist, what aid was rendered in promoting vaccination, and the nature of the opposition which was offered to it.

In *Calcutta* the steady increase of home and station vaccinations clearly indicate that vaccination is readily accepted. The station vaccinations amounted to 58·48 per cent. of the total operations of the year, the home vaccinations to 18·21 per cent., and the bustee operations to 23·30 per cent. The corresponding proportions of the preceding year were 57·18, 15·97, and 26·85 per cent. respectively. The up-country people of all classes still offer resistance. The lower classes among them reluctantly submit to the measure through fear of prosecution, but the opposition of the upper class is still very great, and they adopt various stratagems to evade the law. Consequently the progress of vaccination among them is very slow. The police rendered cordial assistance in all matters connected with vaccination.

Suburbs of Calcutta.—Here also the up-countrymen who have settled for business, or who work as day-labourers, are opposed to vaccination, and will not accept it until notices under the law are served on them. Upon the admission of several cases of small-pox in the Campbell Hospital, it was deemed expedient to vaccinate all the work-people who were employed in repairing that building; but on vaccinators being sent for that purpose, the labourers absconded.

In the *Metropolitan Circles* the Ferazees in the 24-Pergunnahs, Khulna, Jessore, Nuddea, Murshidabad and Birbhum districts, a few Hindu families known as '*Echar Ghar*,' and the Hindu population generally in the Midnapore district, strenuously resist vaccination, the Ferazees most obstinately. Dr. Ghose doubts whether the Ferazees will ever be protected without strict legal intervention, which should reach their zenanas. In the Chunderkona town only one Ferazee out of 100 in it accepted vaccination, and the "Sharacktanti" as a class

have never received vaccination. In thannah Ranaghat the Mahomedans bolted their gates on the approach of the vaccinators, although small-pox was present among them. In the Birbhum town the chief objection is to have children under one year vaccinated. In the Midnapore district lymph from the arms of children is not allowed, the prejudices of the people being so great in the matter that violence is sometimes resorted to when vaccinators attempt to take the lymph. With regard to aid rendered in promoting vaccination, Dr. Ghose brings to notice the following Sub-divisional Officers as having distinguished themselves in this direction. Baboo Umesh Chunder Battabyal of Tumlook, Moulvie Bazlul Karim of Ghattal, Kumar Gopendro Krishna of Baraset, Babu Troyluckho Nath Sen of Bongong, Babu Ram Churn Bhuttacharjee of Ranaghat, and Babu Narendra Nath Roy Chowdhry of Bagirhat. Babu Kartick Chunder Sircar, the Sub-Inspector of the Bhagwanpur thannah, rendered every possible assistance for the progress of vaccination in his thannah. He was the only Police Officer in the whole district of Midnapore who took real interest and trouble in the work. The Sub-Inspector of thannah Egra was indifferent with regard to the help expected from him in the work of vaccination. He evaded furnishing the Deputy Superintendent with the village population list, although a readymade one was in his station. In Howrah a village punchait, named Ramdan Shaikh, not only refused to have his household vaccinated, but also dissuaded the Mahomedans in his neighbourhood from accepting it. Dr. Ghose recommended that such a person should not be allowed to hold a position of importance in the village. The matter was referred to the Magistrate. The Government tehsildar, Bhagabut Chunder Das, in village Nilkantpur, in thannah Contai, was reported to be the ringleader in the resistance to vaccination which was offered in that village. With regard to Police and Civil assistance in general, Dr. Ghose says:—"The question of help given by the Police or other Civil authorities depends on the idiosyncracies of individual officers. Some readily give help, others are very averse to interfere with the prejudices of the people. But where assistance was given much good work was done." It is gratifying to find that the Marwaries in the Burdwan town, who had long held out against vaccination, have submitted to the measure, and have now been well protected.

Dr. Ghose, finding it difficult to enforce vaccination in certain unprotected rural areas, suggested the advisability of arming the village Unions, to be formed under the Local Self-Government law, with power to compel people to accept vaccination when the Superintendents of Vaccination desire them to do so. The question was submitted to Government.

Darjiling Circle.—In this Circle also the Ferazees of Rajshahye and Maldah and the Hindus in Dinajpur and Sherpur offer much resistance, and the people in the Dinajpur district decline vaccination from dislike to their children being carried from village to village as vaccinifers, although the chowkidars are willing to accompany them. In the Julpaiguri district the objection is to have children vaccinated in certain months and during festivals, and especially when the females are in the family way, but the Magistrate says that there is less objection to vaccination in this than in almost every other district he has served in. Managers of Tea gardens all over the Circle rendered aid and encouraged their coolies to be vaccinated, and Dr. Wood has "to thank the gentlemen of the Terai and Duars for their kind assistance." The only exception was the manager of the Garidara Tea Estate, who refused to have the coolies vaccinated in December, which is a busy month. It appears that in some places chowkidars and police constables accompany the vaccinators and render assistance. The Magistrate of Rungpore believes that the presence of a Police Officer makes vaccination unpopular.

Ranchi Circle.—In this Circle the Brahmins, Rajpoots, Bunyas and higher castes, the Marwaries and the up-countrymen, especially the Bunyas, do their best to avoid vaccination and give trouble, and the lower classes take their cue from them. In the Lohardugga district the people generally accept vaccination only through fear of being punished. The aborigines in the Circle take the prophylactic readily and willingly, excepting the Koles in

Singbhum and in thannah Balumath in Lohardugga, who objected strongly, and gave much trouble, as they feared that some evil result would follow the measure. In some places in Hazaribagh great difficulty is experienced in carrying out arm-to-arm vaccination, as the people believe that the child will be hurt, or suffer otherwise if the lymph is taken. The people of Manbhum and Singbhum consider vaccination "as a religious rite. They do not shave their beards, do not send their clothes to the washerman, do not take fish or flesh, and do not use turmeric in their curry, &c." In several cases, however, men and women voluntarily had themselves or their children vaccinated, indicating that the people here are beginning to appreciate the benefits of vaccination. The Pachete Rajah, who had strenuously opposed vaccination for a long time, this year allowed, after much persuasion and explanation regarding the benefits of the prophylactic by the Deputy Superintendent, his grandson and two granddaughters to be vaccinated, and his example was followed by the leading men of the place, who had also to be collected and addressed on the subject. After this vaccination was carried on without much difficulty in the Rajah's territory. Valuable assistance was received from the Civil authorities generally, particularly from the Assistant Commissioner of Palamow, Mr. Rennie, who used every endeavour to forward vaccination, in most cases successfully. The Police also rendered appreciable aid, especially Tanki Proshad, Inspector of Mankah; Bankar Ali, Head-constable of Panki; Ram Jatan Singh, Head-constable of Labiahar; Mufti Hossein, Sub-Inspector of Hosseinabad; Ishri Sahai, the Sub-Inspector of Silli; Gridhari Lall, the Sub-Inspector of Burway, and Guru Sharu Singh, the Ilakadar of Sonahatu. The Municipal Commissioners of Purulia evinced great interest in the work; but the Municipal Commissioners of Ranchi, are said to have maintained an attitude of passive indifference to vaccination. The Superintendent takes the opportunity of recommending to favourable notice the great assistance to vaccination, and generally, given by Babu Bajrang Sahi. This Babu was formerly clerk in Dr. Owen's office, but on his taking up a better appointment as Court Nazir he still exhibited great interest in vaccination. His thorough knowledge of the conditions of this large Circle, of its previous history, of a large number of men who seek employment, and his perfect willingness to furnish full information and assistance in every way, have been of very great service to Dr. Owen, who adds that, the difficulties of carrying on the work in this large area, which are extreme, would have been unsurmountable were it not for the aid rendered by this Babu. Of opponents to vaccination, zemindar Chumru Sahie was very obstructive, and prevented vaccination being carried on in Silli, a large and important village on the Ranchi and Purulia high road, and in 12 of his other villages. The zemindar of Baranda, the Illakadar of Thakoorgaon, the Thakoor of Jorai, Kali Das Bakshi Illakadar of Gola, a very large place, the Ilakadar of Okri, Gopal Thakoor of Marapari, Sukaram Patwar and Chandri Patwar and Dev Charan Thakoor of Joggessur, and Hari Mati thikadar of Jhurpo, also opposed vaccination and prevented its being carried on in their villages. Hit Narain Lall of Balumut would not permit the vaccinated children to be inspected.

Sonthal Pergunnahs Circle.—In Bhagulpore the people generally, and the Rajpoots and Mughia Brahmins especially, resist and distrust vaccination. The same is the case in Monghyr, but in a greater degree, the Rajpoots, zemindar Brahmins and higher classes of the Mahomedans often assuming a hostile attitude. The lower classes of Hindus and those who come under the head of "Other races" in these districts, however, appreciate the measure, and the Superintendent has to a great extent succeeded in breaking down the resistance offered by the above-mentioned higher classes. The Sonthals in the Sonthal Pergunnahs district are docile and voluntarily have their children vaccinated, but the Hindus of Goldar Kaista among them, resist obstinately. The Marwaries in the Colgong and Rajmehal towns, and the same class and the Brahmins in the Monghyr town are bitterly opposed to vaccination, even preferring in the last-named town to pay large fines levied on them, a notable instance of which will be found narrated in a subsequent portion of this Report. The people in the Bhagulpore town, especially the lower class, have no faith in vaccination, as it does not bring out an eruption as in inoculation, without which they consider protection inefficacious. The Magistrate

of Bhagulpore, the Sub-divisional Officers of Banka, Jamoee, Pakour, Rajmehal and Deoghur, and the Police in Rajmehal and Pakour rendered every assistance in promoting vaccination.

Eastern Bengal Circle.—The Forazees who inhabit every district in this Circle, and the educated and well-to.do higher castes of Hindus and a section of the Hindus known as "Haribolas" are most obdurate in resisting vaccination. The Ferazees reject both vaccination and inoculation on religious grounds, but the Hindus of the above-mentioned classes prefer inoculation, considering it more efficacious than vaccination. The Superintendent is of opinion that nothing short of the Compulsory Vaccination Act will break down the opposition of these classes, many of whom resist simply because they know that vaccination is optional. All others, comprising the great mass of the population, either appreciate vaccination, or follow the lead of the "Prodhan" or proprietor of the village in accepting it. A smart outbreak of small-pox in the town of Dacca, after a long period of immunity from the disease, roused the people from their usual obstinate resistance to vaccination. The fanatical Mahomedans in this town hold that their Koran forbids vaccination. In the town of Faridpur vaccinating with tube lymph is objected to, otherwise they are favourably disposed. In the Backergunge town the people were lectured on the subject of vaccination, but they were still obstructive. The law rendering vaccination compulsory is indicated. This enactment is also required for the Muktagachee town, which "may be said to teem with natives of rank and wealth," who are apathetic and indifferent in the extreme towards vaccination. In the Perozepore town the resistance was so persistent that only two persons could be vaccinated. The same cause resulted in only nine being vaccinated in the Bauphal town. In the Pubna town the Muchi class reject vaccination on religious grounds. Mr. Cooke, the Magistrate of Tipperah, Mr. Barooah, the Magistrate of Noakholi, and Mr. Todd-Naylor, the Sub-divisional Officer of Naraingunge, rendered great assistance in promoting vaccination. The last-named officer endeavoured much, but ineffectually, to overcome the prejudices of the Ferazees in char Baktaboli. Babu Pran Nath Basu, the Sub-Inspector of Daudkandi, also gave much help. Of the Municipal Commissioners of the Pubna town, Babus Grish Chandra Roy and Kally Mohun Bose rendered great assistance; but in the Chittagong town, at a meeting of so enlightened a body as the Municipal Commissioners, it was not difficult to see that they were very apathetic about enforced vaccination, and thought inoculation good enough.

Orissa Circle.—In this Circle the greatest opposition is offered by the high castes, such as Brahmins, Mahanties, and Priests, on the ground that no eruptions appear on the body after vaccination, as is observed in cases of inoculation. The low caste people, Mahomedans and Native Christians, readily and willingly accept it. In the Cuttack town, in addition to the high castes, the Bhoojpoories and Marwaries stand in the way of vaccination. In the Puri town the feeling against vaccination is strong, and, as usual, there is great dislike manifested in parting with lymph from the arm. They believe, the Civil Surgeon says, "that a tie is established between the donor and the recipient, and that the ills of life of the latter may also befal the former." In the Balasore town no definite mode or plan of operations can be carried on, as the people have literally to be coaxed for their consent in the matter. In fact all the details, as to day, time and extent of operation, the spot where virus is to be introduced, are settled by the villagers, and the Civil Surgeon says "we simply act the humble part of introducing the virus." The adoption of the Compulsory Vaccination Act is strongly indicated. The Police, Rajahs and Zemindars are reported to have afforded every assistance in carrying out vaccination.

Behar Circle.—In this Circle the people generally are not well disposed towards vaccination, as they distrust its protective power on the ground that no eruptions are caused by it as by inoculation, and because they are strongly impressed with the idea that the imposition of a fresh tax will follow its introduction. The higher classes, such as the Brahmins and Rajputs, are highly refractory, and the poorer classes dislike having their children operated on by the Licensed vaccinators. In Shahabad the people assaulted two of the vaccinators, and it is only the Mahomedans who appreciate the measure, very few opposing it. In the towns of Behar, Gya, Durbhanga and Tajpur

dislike to vaccination exists among the higher classes and the well-to-do. In the Patna town the orthodox of both Hindus and Mahomedans are still reluctant, particularly the Marwaris, who consider it "a special blessing if their children get small-pox spontaneously." In the Mozufferpore town vaccination is regarded with indifference or active hostility. The latter attitude is displayed most by the higher classes of the Hindus, especially the Brahmins and Rajputs. The Mahomedans seem to object to vaccination on the ground "of its novelty." The people in the Allapur pergunnah in Naraya, in Durbhanga, dislike re-vaccination. In the Dumraon town the fact of the Maharaja having allowed his family to be vaccinated had a favourable influence on the higher classes of Hindus. Of all the towns in this Circle, in only Barrh the people entertain a favourable opinion of vaccination, and many parents here asked voluntarily to have their children vaccinated. The Cantonment Magistrate of Dinapore and the Sub-divisional Officer of Buxar rendered much assistance in promoting vaccination, the latter Officer doing his best to remove opposition to the measure in thanahs Dumraon and Buxar. The Police were indifferent to the matter everywhere, except in thanah Belauti, and the Zemindars and Punchayets evinced similar indifference, and some of them opposed the measure, notwithstanding the receipt of the Magistrate's purwannahs. In Bhabuah town, in Shahabad, the Municipal Commissioners aided the work of vaccination. The Magistrate of this district says that the vaccinators in the district received every assistance from the officials and zemindars, and such success as attended their efforts would have been wanting but for this. This is opposed, so far as the zemindars are concerned, to the Superintendent's statement, and also to the following opinion furnished by the Civil Surgeon of Sarun, Dr. Russell, who says, in explanation of not seeking local aid for promoting vaccination, that "long experience has shown that such measures, as far as this district is concerned, are practically useless. All that the Civil authorities can do is to furnish purwannahs which are of no real value, and if the Police are appealed to in order to render assistance, the procedure takes the form of compulsory vaccination. Influential natives are quite apathetic and indifferent as to the success of the measure."

Extension of the Compulsory Vaccination Act.

249. During the year under review the Compulsory Vaccination Act V (B.C.) of 1880 was brought into operation in the towns and thanas named below. The law is now in force in 81 towns, 4 cantonments, and 9 rural areas; and preliminary steps have been taken to extend it to the Chittagong and Sudharam Municipalities.

TOWNS.	THANAS.
Kotechandpur in Jessore.	Brahmanberia, Nobinagur, Moradnagur, Kotwali, Chandina } In Tipperah.
Deoghur, Sahibgunge, Dumka, Rajmehal } In Sonthal Pergunnahs.	
Brahmanbaria, Comillah } In Tipperah.	
Darjiling.	
Cuttack	
Balli in Howrah.	
Sherpore in Bogra.	
Patna.	
Durbhanga.	
Hazaribagh.	
Purneah.	
Puri.	

Mozufferpore.—Dr. Mathew, the Civil Surgeon, has corresponded with the Chairman of the Municipality of *Mozufferpore* regarding making vaccination compulsory in that town; but he says that "circumstanced as we are here,

this is a matter not to be lightly undertaken, and will no doubt be actively opposed by the leading members of the Behari community, whose prejudices are, if anything, more difficult to overcome than those of the humbler and more ignorant classes of the population." The Magistrate also fears that the Municipal Commissioners will refuse to accept the measure, as the Hajipore Municipal Committee have done. *Dinajpur* Municipality.—The Civil Surgeon strongly advocates the introduction of the Act, in order that vaccination may be systematically carried on and the town thoroughly protected. This he thinks the more necessary as the new Railway may bring in cases of small-pox which may spread the contagion. But the Municipal Commissioners are against the measure, and the Magistrate says that "when the place is so free from small-pox that only one case of mild type occurred in the year (and none during the preceding four years) there does not seem to be any very urgent necessity for the introduction of compulsory vaccination against the wishes of the representatives of the community. Vaccination if accepted voluntarily is preferable to compulsory vaccination;" and he finds no difficulty in inducing the people to allow their children to be vaccinated. *Mymensing*—The Civil Surgeon thinks that the Mymensing and the other Municipalities in this district are ripe for the introduction of the Act, and that it could be enforced with ease and without resistance.

Law how worked in the Towns in which it is in force.

250. The administrative details connected with the introduction of the Act during the year into the places mentioned above need not be recapitulated here, as they were, *mutatis mutandis*, the same as mentioned in former Reports. The following observations relate, therefore, only to the attitude exhibited by the people towards the measure, the steps which were adopted to enforce its provisions, the results, and to other cognate matters.

In *Calcutta* the law was more vigorously enforced than before and worked throughout the year, additional establishment being engaged for tracing out the unprotected children by making house-to-house enquiry. It was found that the parents or guardians of 5,716 children had failed to produce the statutory certificate of having had them vaccinated. These cases were enquired into, with the result that 3,717 of these children were subsequently vaccinated; 384 were found to be ill, and vaccinations were postponed in their cases; 739 were found to have left town; 252 had died; 415 could not be traced; 22 had natural small pox; and 187 were prosecuted and vaccinated by order of the Magistrate. There were besides 221 prosecutions of persons who had disregarded the notices served on them, or had omitted to bring their children back to the station for inspection after vaccination. The law is said to have worked very successfully among the lower classes particularly of the floating population, but, as above shown, many evade its requirements. Very few of them have the births of their children registered, and those who do so do not get the children vaccinated, and when the evasion is detected, say that they have sent the children to their native country. In many cases incorrect addresses are given, either intentionally or accidentally, so that these cases cannot be traced afterwards. It is extremely difficult to obtain information of unprotected persons, and children in Burrabazar, Jorasanko, and the other quarters frequented by up-country people, and as a consequence small-pox prevailed to a large extent in these wards. Reviewing the work of the year, Dr. O'Brien writes:—"There can be no question that the results of the working of the Act during the year under review was highly satisfactory. If vaccination is pressed on with the same vigour in succeeding years, the state of protection of the town will improve materially. Nevertheless, it would be chimerical to expect that the town will be ever free from attacks of small-pox as long as its population is a fluctuating one, largely reinforced every year from districts where vaccination exists but in name, and as long as the town is open to the direct importation of the disease by rail and boat from districts where inoculation is still openly practised." *Suburbs of Calcutta*—From Dr. Ghose's report it appears that the whole establishment of the suburban municipality from the Deputy Superintendent downwards were ignorant of the

provisions and requirements of the Compulsory Vaccination Act; that the vaccination depôts were seldom opened, the bulk of the operations being carried on by house-to-house visitations; and that notices under the Act were seldom served and prosecutions for evasions never instituted. Thus the law was a dead letter. Dr. Ghose had therefore to commence the work *de novo*. He first weeded out the obstructive element in the establishment, and then taught the establishment their duty in connection with the law, and throughout the season watched the operation of its provisions. The result was complete success. The work of inspection has become simple; accuracy of figures has been secured; the poor people had the advantage of free vaccination by being saved from the illegal exactions of the vaccinators; and extraneous help in the shape of assistance from the Police, except in the matter of serving notices and summons in which they gave all the assistance which was required, was not much needed. The law is said to have worked successfully in all the five Municipalities in the Burdwan district, viz. *Burdwan*, *Ranigunge*, *Khulna*, *Dainhat* and *Cutwa*, the institution of prosecutions not having been found to be necessary anywhere. In *Burdwan*, owing to the presence of small-pox, operations had to be carried on throughout the year, and it is satisfactory to find that the Marwaris, who were at the outset strongly opposed to the measure, have at last acquiesced and allowed their children to be vaccinated. No reports were received with regard to the manner in which the law was utilized in the towns of *Bankura* and *Bishenpore* in the Bankura district. The report from *Soori* in Birbhum shows that 30 persons who refused to have their children vaccinated were prosecuted, but when they appeared before the Magistrate they agreed to submit to the measure, and did so. There were 22 house vaccinations on payment of the prescribed fee. The registration of births is advocated to enable the law being duly and more efficiently enforced. The law is in force in the six Municipalities—*Midnapore*, *Ghattal*, *Chundrakona*, *Khirpai*, *Ramjibunpore* and *Tumlook*—in the Midnapore district. In *Midnapore* the Civil Surgeon, Dr. Tomes, took great and commendable interest in working out the provisions of the law, resulting in the disappearance, to a great extent, of the resistance, apathy, and indifference hitherto exhibited, and to the attendance at the stations being at last recognized and adopted. The milder measures adopted in the preceding year being found insufficient to induce the people to conform to the requirements of the law, prosecutions of evaders were therefore instituted this year and 90 persons were thus brought up, most of whom were convicted and fined. The result was most marked. The stations were thronged, and the Act works smoothly now. The low classes, however, require to be still looked after, as they are so indifferent and apathetic by nature as to require a stimulus in the shape of a prosecution from time to time. Two hundred and seventy-four home operations were performed, which realized in fees Rs. 68-8. In *Ghattal* the law is said to have greatly lessened, without the institution of prosecutions, the opposition to vaccination hitherto exhibited A hostile attitude is no longer assumed, but some disinclination is manifested in permitting *virus* to be taken from the arms of children. Eighty-nine home vaccinations were performed, which realized Rs. 22-4. The report from *Tumlook* only says that the law was worked in the usual manner and its provisions enforced in cases of necessity. In the three remaining towns, *Chundrakona*, *Khirpai* and *Ramjibunpore*, the provisions of the law do not appear to be utilized, the main reason being that there is only one vaccinator who has been appointed to attend to all the three towns, who, moreover, is deficient in tact and industry. The law was in operation in the seven Municipalities of *Hughli*, *Serampore*, *Bansberia*, *Utterpara*, *Kotrung*, *Boidabatti* and *Bhudressur* in the Hughli district. In *Hughli* the enactment is said to have worked satisfactorily under the usual arrangements. In *Serampore* the Civil Surgeon, Dr. Barker, who is in charge of the working of the Act, paid close attention to the subject. In company with the Registrar of Births, who took his register with him, he went through the town ascertaining in which families children were born during the preceding year. In this way he discovered that children between 3 and 6 months of age of over 100 families had not been vaccinated. He then caused

notices to be served on the parents or guardians of these children, and had those who were in a healthy state vaccinated. In *Utterpara* the people willingly resort to the vaccine stations. A few notices had to be served, but all the recusants, excepting two, submitted to the measure. These two were prosecuted, but the Magistrate acquitted them on the ground that, being above 14 years of age, they could not be punished, *vide* Section 3 of the Act. There were 39 home vaccinations, which realised Rs. 9-13 The Vice-Chairman of the *Boidabatti* Municipality says that, "since July 1883, the time of the introduction of the Compulsory Vaccination Act V of 1880, the health of the town has much improved." There is one vaccine station, and although it is open for two days in the week, the vaccinator has to go to the houses of the respectable persons. There was no opposition. In the *Howrah* town the working of the law is under the supervision of the Deputy Superintendent of the Suburbs of Calcutta with a staff of 3 vaccinators. The people are said to have been reconciled to the measure, but the outturn of work was not satisfactory, and this is ascribed to Balli having been separated from it and to the transfer of the Inspecting Officer on promotion during the working season. The operations were carried on with humanized lymph, as proposals made for the introduction of bovine lymph were rejected by the Municipality under the advice of the Civil Surgeon. On *Balli* being constituted a separate Municipality from that of Howrah, it made its own arrangements for carrying on vaccine operations. Sanction was obtained for the introduction of the law, which came into operation on the 1st of October of this year, and two vaccine stations were established, one at Balli and the other at Belloor, to both of which a vaccinator was appointed; but the latter station was not opened until the end of the working season. There was a falling off in the number of operations, due to the vaccinator having been retained only during the working season instead of throughout the year, as was the case when Balli formed a part of the Howrah Municipality. The law is in operation in 15 Municipalities in the 24-Pergunnahs district, excluding the Suburban, which has been separately reported on. In the *North Suburban* or *Baranagore* Municipality the up-country people, a large number of whom are attached to the mills, opposed the operation of the law, and after steps had been taken to enforce its operations, the opposition was overcome, but with great difficulty. As the area of the *South Suburban* Town is very large, no vaccine depôt arrangements could be made, and consequently the two vaccinators employed by the Municipality went from village to village vaccinating children as they came across them. The work was under the immediate supervision of the Deputy Superintendent of the 3rd Metropolitan Circles and the Inspecting Vaccinator of the Alipore Division. In the *North* and *South Dum-Dum*, *Joynuggur* and *Barripore* Towns the provisions of the law were not strictly enforced. In *Takee* no operations were performed; and in the rest (7) of the Municipalities the law was not worked at all, owing mainly, it is said, to the areas being large, requiring several vaccine stations to be opened and more than one vaccinator to be employed at each. Moreover, the operations in these Municipalities were limited to two or three months only. The Municipal Commissioners of all these municipalities should make better provision for carrying on vaccination and should fully utilize and enforce the provisions of the law. There are 8 Municipalities in the Nuddea district into which the law has been introduced. In *Kishnaghur* the law was worked with much attention, and it is noteworthy that four of the vaccine stations are located at the houses of native Municipal Commissioners, who are persons of position and popularity, and who take much interest in promoting vaccination. There was no opposition, except in one case only, on whom notice had to be served, and who on its receipt submitted to the measure. The Magistrate observes that as the number vaccinated was 525 and the births 549, there is very reason to suppose that the Compulsory Vaccination Act is efficiently administered and observed; but he should have remembered that as the registration of births is incomplete, the unreported births have not been affected by the measure. In the *Ranaghat* Municipality the provisions of the law were not sufficiently or strictly enforced, and no vaccinator was appointed up to the 10th of November. The

Magistrate was communicated with on this point. In the *Nuddea* Municipality no operations were performed. No reports have been received with regard to the other five Municipalities. Similarly no reports have been received with regard to the manner in which the law was worked in the three Towns of *Satkhira*, *Chanduria* and *Debhatta* in the Khulna district, except that at all three Municipalities vaccinators carry out the operations and that at *Satkhira* no vaccine station has been opened. The probability is that no steps have been taken in these Municipalities to carry out vaccinations under the provisions of the Act. The Act was in operation in the *Jessore* and *Mohespore* Towns in the Jessore district. No report has, however, been received regarding the last named town, and with regard to the other, it is said that no necessity had arisen for the enforcement of the provisions of the law. The Civil Surgeon of Jessore suggests that in order to comply with the requirements of the Compulsory Vaccination Act, births should be registered in the Town by the Municipality and not by the Police, in order that the notices may be served as required at the time of registration. In the *Kotechandpur* Municipality the Act was introduced on the 1st of February 1884, but no report has been received as to how it is being worked. In the four Municipalities in the Murshidabad district—*Berhampore*, *City Murshidabad*, *Kandi* and *Jungipore*—the people do not object to the measure, but the Civil Surgeon says that much remains to be done before it can be said to be everywhere in real working order, particularly in the two last named towns. In *Berhampore* it has had a good effect, for the people, knowing that they have to undergo the penalty prescribed by it for evasion, readily bring their children to be vaccinated. In *City Murshidabad*, with the exception of a few old bigotted Mahomedans and shopkeepers who are prejudiced and apathetic, the rest of the people, besides presenting no resistance, exhibited signs of increasing appreciation of the measure, as a number of them had themselves and their children re-vaccinated. Home vaccinations were also carried on, which realised Rs. 18. On the whole much attention appears to have been bestowed on the subject in this town, which resulted in an improvement. Dr. Ghose, the Officiating Superintendent of Vaccination, Metropolitan Circles, has proposed the employment of a permanent vaccinator throughout the year for this town, in order that *virus* may be kept up and any outbreak of small-pox which may occur may be attended to. The Magistrate considers this to be absolutely necessary. In *Jungipore* the law does not appear to have been systematically worked. Rs. 3 were realized for home vaccination. It was reported that in *Kandi* there is no necessity to enforce the provisions of the law, as the people readily accept vaccination. Nevertheless, a depôt should have been opened and fees realized for home vaccinations, which were performed free of charge. In *Beauleah* town in Rajshahye the law is said to be favourably received and to have worked remarkably well, but the late outbreak of small-pox does not indicate that this statement is correct. In the *Rungpore* town the vaccinators have to vaccinate the people, high and low, in their houses without payment of the prescribed fee. The Magistrate says that "until vaccination becomes popular it must be performed free of charge. One can hardly expect even the tame and humble Rungporian to pay for an operation which he objects to and disbelieves in." *Bograh* and *Sherpore* Municipalities in the Bograh district: Nothing special has been reported with regard to the working of the law in the former Town, and in the latter in which it was introduced late this year—on the 1st of October—the people at first opposed the measure, but on notices being served on some of them, their opposition ceased, and the law is now working with "improved results." In the *Pubna* Town the Act, although introduced in 1882, was not systematically worked until the year under review. The people, particularly the Mahomedan women, strongly objected to attend the two vaccine stations which were opened, and insisted on home vaccination. It was deemed advisable to relax the rule at the onset, and the vaccinators were allowed to operate on the people at their houses. Sixty notices had to be served, and prosecutions were instituted when persuasive and other means failed. The lower classes still evince reluctance. For these reasons, as well as on account of the prevalence of fever, progress has been slow; but it is believed that the people will be gradually reconciled to the

measure. In the *Darjiling* Municipality the Act was introduced this year. The usual procedure was adopted, viz., establishment of vaccine stations, notifying to the people that the law was in force, &c. Although the vaccinator regularly attended the stations, a large portion of his work was done by the usual house-to-house visitations. No reports as to the manner in which the law was worked in the *Comillah* and *Brahmanberia* Municipalities in the Tipperah district, into which it was brought into operation on the 31st of March 1884, have been received, except that there was no opposition exhibited by the people. In the *Patna* Municipality the law was introduced this year in October. The usual steps were taken for bringing it into operation, and an Inspector appointed to supervise its operation. The measure being new, the people did not understand it, but they are at the same time extremely apathetic and do not trouble themselves about vaccination, except when it is forced upon them. House-to-house operations were also carried on, it appears, without the prescribed fee being charged, as the upper classes are reluctant to send their children to the depôts. It is expected that during the next season there will be an improvement in the attendance at the depôts when the people will have been impressed with the benefits of vaccination. In the *Gya* Town generally, the Mahomedans appreciate the measure more than the Hindus, but the higher classes and well-to-do of both communities and the Priests still resist the operation of the law by every means in their power. Five hundred and sixty-five notices had to be served, and 130 of these cases had to be handed up to the Magistrate before the recusants would comply with the requirements of the law. There were besides 81 prosecutions for evasions, resulting in 31 persons being fined and the rest having their children vaccinated before the Magistrate. Home vaccinations were carried on, which realized Rs. 48-4. On the whole, however, the work is said to be progressing well. In the *Durbhanga* Municipality the law was introduced this year, and the usual steps taken to give effect to it. No opposition was offered, and it was observed that the reluctance exhibited in former years had given way under the operation of the law, and the system is reported to be working well. In the *Monghyr* Municipality the major portion of the rich kept aloof. They are either active opponents or simply apathetic. The Police were also less zealous in reporting recusants. It was noticed that parents sent away their children till the vaccination season closed, when they were brought back to be a danger and centre of infection the moment an epidemic of small-pox breaks out. This cannot, it is said, be checked till birth registration is more efficiently carried out. The Honorary Magistrates, it is reported, added largely to the difficulties which had to be contended against. Cases for refusal to comply with the law sent up to them were either postponed time after time, or the accused were fined an anna or two. The Magistrate says that notice has been taken of this. Moreover, the idea gained currency that punishments for refusal could not be inflicted in consequence of the child being under one year. The poorer classes do not offer active opposition ; but of the rich people above alluded to, the Bunneahs and Marwaris are still bitterly opposed to vaccination, resist its introduction into their families by every means in their power, even preferring to pay large fines levied on them. "In this way one of the richest of the community has successfully evaded complying with the Act, the delays attending a legal process having seen him pass through an entire season without his children being vaccinated." His example has encouraged others, as he makes no secret of his intention to continue the operation. The Magistrate states that the Bunneah in question is one Sental Pershad, who has been fined twice, once Rs. 50 and another time Rs. 100, for not vaccinating his children, but is still recusant. He and others have sent up a memorial to Government praying that they may be exempted from the operation of the law. A report on this memorial was called for and submitted, and the opposition will no doubt vanish when they find that they cannot be exempted. In the *Jamalpore* Municipality in the Monghyr district there were 24 prosecutions, in which 10 of the accused were fined, and the rest let off as they vaccinated their children after service of summons. Home vaccinations were carried on, which realized Rs. 21-12-0. All the Railway employés have been vaccinated within the last two years, as under an

order of the Agent they are bound to be vaccinated under penalty of dismissal or heavy fine. The Act was introduced into the *Bhagulpore* Municipality on the 15th of February 1884. At first the vaccinators were posted at the stations, but as the people did not bring their children to them, it was decided that they should proceed from ward to ward, the Municipal Commissioners of the several wards undertaking to collect the people of their respective wards in their own houses and to render every assistance in their power. In the *Colgong* Town in the Bhagulpore district the Marwaris and Brahmins refused to allow their children to be vaccinated, but on being prosecuted they accepted the measure. In the *Purneah* town the provisions of the law are well received, and it has not been found necessary to prosecute any person. In the *English Bazar* Town, in the district of Maldah, the law is said to have worked as in the preceding year. Notices had, however, to be served on those who refused to have their children vaccinated, and two of the accused were prosecuted. It is said that on the whole the measure is approved. The Act was introduced into the four Towns in the Sonthal Pergunnahs district—*Sahebgunge*, *Rajmehal*, *Dumka* and *Deoghur*—on the 1st of October. In *Sahebgunge* the measure was not favourably looked on by the people, particularly by the Marwaris, who obstinately opposed it, but on the law having been brought to bear upon them they yielded. Similarly there was some opposition in *Rajmehal* Town, which was subdued by the enforcement of the law. No reports have been received regarding the operation of law in *Dumka* and *Deoghur*. In the *Cuttack* Municipality and *Cuttack Cantonment* the Act was introduced on the 1st of September, and the necessary steps taken to give effect to its provisions. The Superintendent of the Orissa Circle says that the law is working satisfactorily in both Town and Cantonment. *Puri Town.*—This Town was divided into two sections, and a vaccinator worked in each and one in the neighbourhood of the Town. Each of them was furnished with a certificate stating that he was authorized to vaccinate, but the people being very averse to vaccination, the progress was very slow. In the *Hazaribagh* town the Act was brought into operation on the 1st of January 1885. The practice here is for the vaccinator to apply twice for permission to operate, and if vaccination is refused, he takes down the names of the parties who decline to comply, for prosecution. This procedure, the Civil Surgeon, Dr. Meadows, says, removes all objections and prejudice, as here the "people understand direct orders and believe in their efficacy when they see that the authorities are in earnest."

Operation of the Compulsory Vaccination Law in the Rural Circles.

251. In the district of *Bhaugulpore* the Act was in force in the *Rural Circles* of *Bhaugulpore*, *Sultangunge*, *Colgong* and *Bihipore* from the 15th February 1884. The administrative details connected with its introduction have been mentioned in the report for 1883-84. The Superintendent of Vaccination, Sonthal Pergunnahs Circle, mentions in his report that the people were generally against the measure, and great resistance was met with, particularly from the Rajpoots and zemindar Brahmins; that several cases of evasions of the law had to be reported; and that some of the persons implicated in these cases were vaccinated before the Magistrate and others subsequently, while several were punished. A more comprehensive report should have been furnished of so important a subject. *Tipperah.*—In this district the law was introduced into the *Rural Areas* of *Brahmanberia*, *Nobinagore*, *Mooradnagore*, *Kotwali* and *Barkampta* on the 31st of March 1884. No particulars have been furnished referring to the *modus operandi* connected with its introduction. The Magistrate reports that he received no complaints as to its working, and he therefore presumes that its provisions are not repugnant to the feelings of the people. The law, however, is not suited to rural areas and can never be efficiently worked in them.

Results of the operation of the Compulsory Vaccination Act.

252. The effect on vaccination which the action of the Compulsory Vaccination Act has brought about during the year under review in the areas in which the law was in operation will be gathered from the subjoined table.

Districts.	Areas.	Total number vaccinated in 1884-85.	Difference as compared with 1883-84.		Percentage of successful operations to total number vaccinated.	
			Increase.	Decrease.	Primary.	Re-vaccination.
	Towns.					
	Calcutta	15,955	6,417	...	95·90	11·16
	Suburbs of Calcutta ...	10,764	...	3,633	94·98	59·45
Burdwan	Burdwan	1,08[illegible]	...	910	96·62	66·66
Burdwan	Ranigunge	548	307	...	97·79	100·
Burdwan	Khulna	124	124	...	80·64	.
Burdwan	Dainhat, Cutwa	905	379	...	98·92	14·81
Bankura	Bankura	827	42	...	96·01	71·42
Bankura	Bishenpur	896	320	...	100·	...
Birbhum ...	Soori	277	8	...	91·57	100·
Midnapore	Midnapore	2,727	1,959	...	95·49	69·04
Midnapore	Khirpai	228	228	...	100·	...
Midnapore	Ghattal	482	482	...	92·94	..
Midnapore	Chundrakona	92	92	...	100·	...
Midnapore	Ramjibanpore	263	263	...	100·	.
Midnapore	Tumlook	383	383	...	81·48	89·57
Hughli	Hughli	1,976	256	...	76·91	10·25
Hughli	Serampore	1,087	301	...	99·90	56·66
Hughli	Utterpara	156	14	...	100·	100·
Hughli	Bhudessur	170		154	98·24	...
Hughli	Bansberia	222	222	...	90·86	...
Hughli	Baidyabatti	200	...	12	98·49	100·
Hughli	Kotrung	171	...	103	100·	...
Howrah	Howrah	4,523	...	1,024	98·82	90·00
Howrah	Balli	223	Included with Howrah.		98·59	90·00
24-Pergunnahs	North Suburban ...	1,359	861	..	98·05	73·91
24-Pergunnahs	South Suburban ..	726	..	311	99·58	...
24-Pergunnahs	Rajpore	349	349	...	100·	...
24-Pergunnahs	Barripore	97	97	...	100·	...
24-Pergunnahs	Joynuggur	249	249	...	98·39	...
24-Pergunnahs	South Dum-Dum ...	129	2	...	100·	...
24-Pergunnahs	North Dum-Dum and Cantonment ...	540	398	...	99·81	100·
24-Pergunnahs	South Barrackpore and Cantonment ...	1,364	448	...	93·67	90·47
24-Pergunnahs	North Barrackpore ...	467	38	...	98·28	.
24-Pergunnahs	Baraset	650	221	...	99·83	36·84
24-Pergunnahs	Nyehatti	434	.	113	99·53	80·00
24-Pergunnahs	Busirhat	791	791	...	100·	...
24-Pergunnahs	Baduria	299	299	...	100·	...
24-Pergunnahs	Goberdanga	201	201	.	100·	...
24-Pergunnahs	Takeo	......	...	*Nil.*	...	...
Nuddea	Krisnaghur	625	...	144	91·32	17·07
Nuddea	Santipore	552	...	29	100·	..
Nuddea	Ranaghat	205	13	...	100·	25·00
Nuddea	Kushtea	280	34	...	95·00	...
Nuddea	Meherpore	337	93	...	98·81	...
Nuddea	Birnuggur	67	...	43	100·	...
Nuddea	Coomercolly	300	164	..	97·77	...
Nuddea	Nuddea	......	...	*Nil.*	...	...
Jessore	Jessore	579	285	...	94·97	100·
Jessore	Moheshpore	38	38	...	100·	...
Jessore	Kotechandpore	87	87	...	100·	...
Khulna	Satkhira	334	334	...	99·09	100·
Khulna	Chanduria	231	231	...	100·	...
Khulna	Debhatta	303	303	...	97·65	100·
	Towns—*continued.*					
Murshidabad	Berhampore and Cantonment	664	...	497	98·03	66·68
Murshidabad	Lalbagh	1,375	156	...	98·08	74·26
Murshidabad	Kandi	421	15	...	100·	..
Murshidabad	Jungipore	351	...	312	99·40	62·50
Rajshahye ...	Beauleah	770	243	...	98·96	...
Rungpore ...	Rungpore	188	...	95	95·21	...
Bogra	Bogra	287	110	...	100·	...
Bogra	Sherpore	247	208	..	98·78	...
Pubna ...	Pubna	745	745	...	98·95	39·13
Darjiling ...	Darjiling	1,314	1,314	...	100·	100·
Tipperah	Comillah	768	8	...	84·73	...
Tipperah	Brahmanberia ...	948	...	524	98·63	...
Patna ...	Patna	4,047	...	1,800	87·56	17·34
Gya ...	Gya	981	...	1,232	63·05	25·86
Durbhanga .	Durbhanga	1,619	...	75	94·09	90·00
Monghyr	Monghyr	6,145	1,509	...	98·62	59·68
Monghyr	Jamalpore	1,298	183	...	93·65	96·42
Bhagulpore	Bhagulpore	1,047	441	...	83·54	48·38
Bhagulpore	Colgong	245	Equal.		100·	...
Purneah ...	Purneah	417	3	...	95·97	45·00
Maldah ...	English bazar	1,001	1	...	94·29	94·59
Sonthal pergunnahs.	Dumka	83	83	...	78·31	...
Sonthal pergunnahs.	Rajmehal	85	85	...	97·61	100·
Sonthal pergunnahs.	Sahebgunge	340	340	...	100·	...
Sonthal pergunnahs.	Deoghur	19	19	...	94·73	...
Cuttack	Cuttack	681	...	305	68·12	26·31
Cuttack	Do. Cantonment	143	143	...	63·10	70·00
Puri .	Puri	339	...	90	71·09	...
Hazaribagh ...	Hazaribagh	108	108	...	79·77	..
	TOTAL FOR MUNICIPALITIES	82,388	11,804	...	94·74	30·41
	Thanas.					
Tipperah	Brahmanberiah thana ...	1,101	...	19,515	99·81	..
Tipperah	Nobinagur „ ...	1,874	...	30,714	100·	...
Tipperah	Muradnuggur „ ..	3,072	...	27,535	100·	..
Tipperah	Kotwali „ ...	1,239	...	17,215	100·	...
Tipperah	Barkampta „ ...	692	...	25,766	99·13	...
Bhagulpore	Bhagulpore thana ..	4,502	4,453	...	99·22	37·50
Bhagulpore	Sultangunge „ ...	3,460	434	...	99·38	...
Bhagulpore	Colgong „ ...	10,481	9,865	...	98·40	...
Bhagulpore	Bihipore „ ...	8,014	7,978	...	99·90	...
	TOTAL FOR THANAS ...	34,435	...	98,015	99·29	37·5
	GRAND TOTAL ...	116,823	...	86,211	96·13	30·42

The returns from the above-mentioned *Municipalities* show a very considerable improvement in comparison with the preceding year, inasmuch as there was an increase, on the whole, of 11,804 in the number of the operations performed, eliminating Balli, which forming a part of Howrah in the preceding year, furnished no separate returns, and Colgong, in which the work of both years was equal. Fifty-eight of the remaining 80 Municipalities in the above list contributed to the improvement—most largely, Calcutta (6,417 operations), Midnapore (1,959), Monghyr (1,509), Darjiling (1,314), North Suburban town (861), Bussirhat 791), Pubna (745), Ghattal (482), South Barrackpore (448), and Bhagulpore (441). On the other hand, the largest decreases in the number of the operations were returned by the Suburban (3,633), Patna (1,800), Gya (1,232), Howrah (1,024), Burdwan (910), Brahmanbaria (524), Berhampore (497) Municipalities. With regard to the quality of the vaccinations performed, many of the Municipalities exhibit inferior percentages, due no doubt to the close and systematic inspections of the work of the vaccinators by the Inspecting Officers, which prevented them from passing off fictitious figures.

With regard to the *rural* areas, while every thana in the *Bhagulpore* district exhibits increased operations, those in *Tipperah* show considerably diminished results, but this is accounted for by the withdrawal of the Government vaccinators to other areas.

Points on which the Compulsory Vaccination Act requires Amendment.

253. Opportunity was taken when reporting on the memorial presented to Government by Sir Richard Garth and certain other influential residents of Calcutta, complaining against the working of the Bengal Vaccination Act, 1880, in the Town, particularly with regard to their being no suitable accommodation for small-pox patients nor any hospital, to discuss the question as to the points on which the abovementioned Enactment required amendment. The amendments suggested by me were, (*a*) provision to be made for compelling unprotected persons to report themselves for vaccination instead of waiting for the serving on them of the notices prescribed by Section 11. (*b*) In cases where this notice has to be served, the period of 15 days allowed by it, within which an unprotected person is required to submit himself for vaccination, be reduced. (*c*) Under Section 3 of the Act, the parent or guardian is not *bound* to present a child for vaccination within the following periods, viz., if the child is born in Calcutta, within one year after its birth, and if a child of under 14 years of age is brought to reside in Calcutta, within six months after arrival, or if the child is at the time of its arrival less than one year old, within one year and three months after its birth. These periods are considered generally, both in the Metropolis and in the mofussil Towns, as too long, favouring the postponement of vaccination to which the people are naturally prone, and thus affording them the chance to remove their children in an unprotected condition. But the most serious result in connection with this defect is that, the most important and vital end for which vaccination has been established, viz., the suppression of small-pox, is rendered abortive, for it is well nigh impossible to extinguish the epidemic prevalence of the malady in an affected locality where there is a large number of unprotected subjects who cannot be operated on immediately. From the reply of Government it appeared that most of my suggestions had been already recommended by a Committee appointed by the Municipal Corporation of Calcutta to report upon the working of the Vaccination Act and was under the consideration of Government, and that this Committee had proposed further that the Act should also be amended so as to render re-vaccination compulsory at periodical intervals and to provide for the compulsory isolation of persons suffering from small-pox in suitable wards, so as to prevent infection. In connection with this point I was requested to report whether the balance of medical opinion in favour of re-vaccination is so decided as to justify Government in enforcing such a measure; if so, to indicate in some detail the measures that would be necessary to enforce the operation, having regard to the circumstances of Calcutta and the habits of the people, and to specify any measures that might, under the above circumstances, be legitimately taken to prevent the spread of infectious disease. I submitted the following report. That the balance of medical opinion in favour of the necessity of revaccination for the complete protection of any community from small-pox is overwhelming; that the necessity of its legal enforcement has often been favourably discussed in Medical Publications in England; and that, if His Honor finds that he is able to be guided by medical opinion alone, he will be fully justified in amending the Act. With regard to the detailed measures that would be necessary to enforce the operation under the circumstances of Calcutta and the habits of the people, I suggested that it appeared to me that revaccination could be successfully accomplished, provided the present system of house-to-house inspection is kept up; and that the officers of the Vaccination Department have powers granted them whereby they can legally examine persons found in Calcutta as to their state of protection, and, in the event of its being insufficient or doubtful, that they have power to serve notices on such persons, if in good health, requiring them to submit themselves to re-vaccination within a period of 15 days. That fines should be inflicted in case of recusancy. That the officers of the department should also have the right of entry into public institutions, such as schools, mills and factories, to enable them to ascertain the state of protection enjoyed by the scholars and employés. That it should be made a rule that all persons vaccinated, inoculated, or having

gone through natural small-pox in youth, should be obliged to submit to re-vaccination when adults; but that even before attaining to this period of life, the necessity of re-vaccination should rest with the Officers of the department. That it might be premature to amend the Act on the above points for the whole Province, but that their application to Calcutta, the Suburbs and Howrah is indicated. With regard to the measures which might be legitimately taken to prevent the spread of infectious disease, and taking small-pox as the type with which we have to deal in Calcutta, I recommended (*a*) that sufficient hospital accommodation should be provided, if such is not at present the case, for the isolation of all sufferers from small-pox in whose cases perfect segregation cannot be provided in their own houses, till the danger of infection is past. (*b*) That in the event of the Officers of the department finding that, from circumstances of family or dwelling, it is impossible to isolate patients in their own homes, that they have power to require their removal to the appointed hospitals and their detention there till danger of infection is past. (*c*) That the disinfection and, if necessary, the destruction, of clothing used by infected persons should be carried out by the Officers of the department; and that, in the event of thorough disinfection of articles, such as rezais, blankets, &c., not being immediately practicable, the Officers should have power to destroy them, compensation being given by the Corporation if the owners are in poor circumstances; but that it would be well, however, if the Corporation kept in possession disinfecting stoves, some of which are constructed so as to be moveable from place to place. (*d*) That the purification of houses should be placed within the powers and under the control of the Vaccination Department, and that they should be empowered to even order complete destruction of mat or other huts, as mats being very absorbent of small-pox discharges, cannot easily be dealt with by fumigation or otherwise, and that in cases of destruction compensation should be made by the Corporation. In addition I suggested that, it would be useful to make the notification of the presence of small-pox compulsory; that every householder, lodging house-keeper, or head of a family be required to report the presence of the disease at the Police Station in the jurisdiction in which his residence is situated, and that the police should then report to the Health Officer, Calcutta, or, in the case of the Suburbs and Howrah, to the Superintendent of Vaccination, Metropolitan Circles.

The Commissioner of the Orissa Division suggested certain amendments, principally verbal, in the rules framed under Section 33 of the Compulsory Vaccination Act to make them applicable to the Cantonment to which the law had been extended. I approved of the modifications, and suggested that the revised rules be printed for use in all the Cantonments in Bengal to which the Enactment may in future be extended.

During the year the Civil Surgeon of Midnapore enquired what action could be taken under the Bengal Vaccination Act in a case where an unlicensed and unqualified person is found to be practising vaccination and taking fees in a Municipality to which that Enactment had been extended, as he had reason to believe that such irregular vaccination was being carried on in the town of Midnapore, which seriously interfered with the proper working of the Act and rendered the people liable to indifferent vaccination at cheap rates. The question was referred to the Superintendent and Remembrancer of Legal Affairs, and that officer's opinion is that "there does not appear in Act V (B.C.), 1880, to have been any intention to prohibit private vaccination, and consequently no warrant for the Civil Surgeon regarding such men as criminals."

During the year the Health Officer of the Port of Calcutta reported that it was difficult to work the Compulsory Vaccination Act afloat, and that it was inapplicable to the shipping. The question was submitted to Government. The chief difficulties appear to be the allowing of 15 days from date of notice within which to accept of vaccination, the results being that the crews disperse before the 15 days have expired, and Commanders of vessels deliberately calculate the time which the loading of them will take up and withhold leave from their crews to enable them to get vaccinated, if they find that their vessels

will be ready for sea before the expiration of the limited time. There is also no provision existing in the law to prevent the unprotected on board pilgrim ships in which small-pox has broken out from leaving the vessels, it being at present optional with them to accept vaccination, and detention for the purpose is objected to. The Health Officer suggested the desirability of vesting the sanitary authorities with the power of limiting the spread of the disease in the localities to which the pilgrims may proceed, by the immediate vaccination of all unprotected persons found on board of not only pilgrim ships, but also of *all* infected vessels, on arrival, as no such power is given by section 13 of the Bengal Vaccination Act, which only provides for the serving of notices on unprotected persons warning them to have themselves vaccinated within 15 days. It was observed that within this limit men may leave their ships, take service in others, scatter over the town in sailors' boarding-houses, or disperse over Bengal, &c. The adoption of the practice obtaining in New York, where immigrant steamers are boarded by the Health Officer and vaccinators, and vaccination performed whenever necessary without delay, was suggested as the only efficient safeguard, and it was pointed out that in the event of this procedure being approved, it would be necessary to provide for the detention of such persons as might refuse vaccination until the period of incubation had, in their cases, been passed without the appearance of small pox. I also submitted this question to Government with my approval and with the further suggestion that the Health Officer should also have the power of re-vaccinating such of the men as in his opinion require it.

No orders have been received on the above references, but I suppose that they will be taken up in connection with the question of amending the Compulsory Vaccination Act, which, I believe, is yet under the consideration of Government.

Particulars regarding Inoculation.

254. The law prohibiting inoculation, Act IV (B.C.) of 1865, was extended during the year under review to the two remaining thanas of Faridpore and Goalundo in the district of Faridpore; to thanas Dumraon, Buxar, Peroo and Dhangain in the district of Shahabad; to thanas Begumgunge and Ramgunge in the district of Noakhali; to the remaining thanas Kasba, Daudkandi, Hajigunge, Chandpore, Laksham, Jagannathdighi or Chandogram in the district of Tipperah; to the remaining thanas of Hilsa, Mokamah, Patna and Bankipore in the district of Patna.

In the following places this law has not yet been brought into operation. The whole of the Backergunge district. *Chittagong.*—The whole district, excepting Chittagong town. Thanas Sundeep, Fenny, Chagalnaya, Hatia and Lakhipore in the *Noakhali* district. *Gya.*—The whole district, excepting the towns of Gya, Aurungabad and Jehanabad and thana Jehanabad. *Mozufferpore.*—The whole district, excepting Mozufferpore town. *Durbhunga.*—The whole district, excepting Durbhanga town. Thanas Sasseram, Khargher or Nokha, Bhabuah, Durgawati, Chand, Dehree, and Mohania or Ramgarh in the *Shahabad* district. *Sarun.*—The whole district, excepting Chupra, Revilgunge and Sewan towns. *Chumparun.*—The whole district, excepting Bettiah town and thanas Adapur, Dhaka and Motihari. Thanas Tegrah and Beguserai in the *Monghyr* district. *Cuttack.*—The whole district, excepting Cuttack town. *Puri.*—The whole district, excepting Puri town. *Balasore.*—The whole district, excepting Balasore town.

Metropolitan Circles.—Inoculation is not carried on in the Suburbs of Calcutta, and the Officiating Superintendent had no information of its practice anywhere in his Circle during the year. But the tenor of the local reports generally indicate that inoculation is a thing of the past in all the districts of this Circle, excepting Midnapore and Khulna, where, if in vogue, the practice is rare. In the *Darjiling* Circle it is believed to be hardly prevalent anywhere, one or two cases only having been heard of in the Purneah district. It, however, prevails in parts of Nepal bordering on the Darjiling district, in Sikkim, and in Bhootan, whence small-pox is liable to be introduced into the Circle. *Ranchi* Circle.—The Civil Surgeons of Hazaribagh and Manbhum say that the practice of inoculation is gradually dying out in these districts. In the *Sonthal Pergunnahs* Circle it is not practised in the Sonthal Pergunnahs district, but

prevails in parts of Monghyr and Bhagulpore, mostly in thana Beguserai in the former district, and even in some areas in which the prohibitory law is in force. Of course in those places in which the law is not in force it is universally resorted to. In the Monghyr district the rich people and the Bunneahs and others not only allow inoculation in their families, but also do everything in their power to protect and screen from punishment the inoculators when their practices are brought to light. Four cases of inoculation which occurred in Bungaon in Bhagulpore were reported to the Subdivisional officer. In the *Eastern Bengal* Circle wherever the Act is not in force inoculation is freely resorted to by the people and fostered by the wealthy Hindus. The practice is, however, reported to be dying out in Chittagong, chiefly due to want of *virus*, small-pox being almost absent from the district. In Noakholi it is said to be resorted to in places where it is difficult or impossible to secure the services of vaccinators. In Chandpore thana in Tipperah inoculation was freely practised both before and after the prohibitory law was brought into operation in it. Several of the inoculators were reported, prosecuted, and punished. It was also carried on in the Ramgunge thana in Noakholi. Here also two of the inoculators were prosecuted and punished. In the *Orissa* Circle it is freely practised in the interior of all the three districts of Cuttack, Balasore, and Puri encouraged by the wealthy, the Brahmins, Mohanties and Priests, and by the worshippers of the goddess of small-pox in the village of Berajah in the vicinity of the Jajipur town. It is said that any one in the Balasore town preferring inoculation to vacination, has simply to cross the municipal boundary, and have himself operated on without fear. In the *Behar* Circle inoculation is freely practised in the areas in which the prohibitory law is not in force, and even in some where it is in operation. It was extensively carried on in parts of the Shahabad district, chiefly by the inoculators to whom the Magistrate had granted perwannahs to practice vaccination, under circumstances mentioned in a foregoing portion of this Report. These men were troublesome in the extreme and greatly interfered with vaccination, notwithstanding that the Head vaccinators exerted their best to put a stop to their practice by prosecuting several of the delinquents, so that, according to the Superintendent, the promulgation of the prohibitory law did not virtually stop the practice of inoculation in this district. The Police Officers were reported to have been also here, as usual, quite indifferent in the matter, particularly in thana Arrah. The Civil Surgeon of the district, at the instance of the Superintendent of Vaccination, very rightly refused to grant licenses to inoculators or ex-inoculators, on the ground that they make use of the licenses to practice inoculation in places where it is prohibited. In the *Sitamurhee* sub-division in the Mozufferpore district the people are still opposed to have their children vaccinated, and seem to dislike the vaccinators. The Compulsory Vaccination Act is suggested as the only means of rooting out inoculation. Inoculation is universally practised in *Durbhanga* amongst all classes of the Behari community. The people have implicit confidence in it, and do not recognize its dangers. The operation is, as elsewhere, associated with religious ceremonials connected with the worship of Shitola, and it is owing to this religious association that it finds so much favour with the people. The practice is carried on in some of the villages in the *Behar*, *Hilsa*, *Masouri*, *Bickram*, and *Silao* thanas in the Patna district, notwithstanding that the prohibitory law is in force in them. Two of the inoculators were punished, but 21 cases from five villages were reported to the sub-divisional officer of Pattygunge outpost in thana Bickram, but "to no effect." Although prohibited in the *Behar* town by law, the practice of inoculation finds favour with the wealthier sections of the community. The Assistant Surgeon advocates the introduction of the Compulsory Vaccination Act to check this tendency.

Influence of Vaccination and Inoculation on Small-pox.

255. The reports show that, as a rule, the controlling influence of vigorous and well-directed vaccination in localities affected by small-pox had the effect of arresting the progress of the disease. Where the efforts in this direction were loose, spasmodic, or misdirected, such as was the case in the Sonthal Pergunnahs Circle, success did not follow the measure. I submit below the opinions of some of the Officers of the Vaccination Department on the relative

merits of Vaccination, Inoculation, and Non-protection. The figures illustrating these opinions have been collected carefully on the spot by the vaccination department, but they are limited and below the number furnished by the Registration agency so far as deaths are referred to, because the figures of this agency embrace entire districts. But partial as they are, the Vaccination department figures are more reliable. It is also to be regretted that deaths under each head of information dealt with could not be furnished by the Vaccination Department separately, as their absence deprives the deductions to be drawn from the information of their chief value.

Calcutta.—Dr. O'Brien, the Superintendent, says that, in accordance with the habit of the disease observed through a long series of years, 1884-85 ought to have been a year of maximum prevalence; instead of this, we find that for an epidemic year it shows very low figures. It may be said with much reason that the epidemic spread of the disease was controlled and abated by wide-spread vaccination. A special establishment of six vaccinators was employed for two months to stamp out the disease by pushing on vaccination in the immediate vicinity of infected houses, and on the expiration of this period a strong establishment in addition to the regular staff, with an Assistant Superintendent, was employed permanently, who made a regular and systematic enquiry to find out unprotected persons in some of the sections of the Town notorious for outbreaks of small-pox, reporting for prosecution a large number who evade the requirements of the law on the subject. In the previous year there were no prosecutions, but large numbers were then vaccinated during the hot weather and rains, and this had the desired effect of reducing the disease from an epidemic to a sporadic form. Dr. O'Brien notes that of 451 reported cases of small-pox enquired into, 335 were temporary residents and had been in the town for less than one year and that 116 had resided in it for upwards of a year, and that of this total 96 had been previously vaccinated, 116 had been inoculated, and 239 were unprotected; but that of the 96 post-vaccinal cases, 14 occurred among children recently vaccinated, before protection could be effectual.

Metropolitan Circle.—It is to be regretted that the Officiating Superintendent of this Circle could not collect sufficient data with regard to the influence of vaccination on small-pox. But from the figures he obtained it is seen that of 64 unprotected persons who were attacked by the disease, 19 died, being at the rate of 29·68 per cent. of the attacked, and that there were 39 ascertained outbreaks of the disease in the districts in this Circle, involving 936 persons, of whom 100 had been inoculated, 67 had been vaccinated, 4 had natural small-pox, and 765 were unprotected—and that in the Suburbs of Calcutta there occurred 122 cases, of whom 13 had been inoculated, 6 vaccinated, and 103 were unprotected, the deaths numbering 57. I may mention here that of the 39 outbreaks abovementioned, 12 were traced to contagion, the history of which (too long for reproduction here) has been furnished in detail, fully establishing the fact; and that of these 12 outbreaks, traced to contagion from a distance, 9 were found to have been imported from Calcutta to light the fire in the unprotected localities in the mofussil to which the infected went, and this, Dr. Ghose thinks, corroborates the view taken by the Commission appointed to enquire into the sanitation of Calcutta, that "it was rather Calcutta and its Suburbs which were the centres from which contagion passed into the mofussil than *vice versa.*" He also submits that inoculation does not give actual protection, as is proved by the high percentages of success in re-vaccination. Thus in 43 cases of vaccinations in certain villages in thana Midnapore, he found 26 re-vaccinations all successfully operated on, and Assistant Surgeon Jogendro Nath Bhattacharjee reports that he saw six vaccinated persons in Jeliaparah in the Suburbs of Calcutta who had been inoculated in childhood; and that in all these cases the operations looked very well, the vesicles being typical. Dr. Tomes, the Civil Surgeon of Midnapore, reports that in an outbreak which occurred in the Town the benefit of vaccination was exemplified in a striking manner which could not fail to attract the notice of the people, inasmuch as the disease constantly singled out unprotected in-

dividuals of a community, the protected occupying the same house or group of houses always escaping.

Sonthal Pergunnahs.—It is a significant fact, affording inferential proof of the benefits of vaccination, that in the Monghyr and Bhagulpore districts, where small-pox has been prevailing with a persistency unapproached by any of the districts in the other Circles, where vaccination is strongly resisted, and where, consequently, there are a large number of unprotected subjects, no less than 7,011 cases of small-pox were reported to have occurred during the year under review, attended with 1,114 deaths, yielding the percentage of 15·89 to number attacked.

Eastern Bengal Circle.—In this Circle there occurred 656 cases of small-pox, of whom 64 were protected, 49 by vaccination and 15 by inoculation; and the unprotected numbered 592, or in the proportion 90·24 per cent. of the number attacked. The Civil Surgeon of Dacca reports that in a severe outbreak of small-pox in the Dacca town it was observed that the highest mortality occurred in that part of it where the greatest resistance to vaccination was offered; and that it is worthy of note that in a Mahomedan family, consisting of 400 members, the majority of whom had been vaccinated or re-vaccinated, small-pox did not attack the protected members, whereas among the other members who would not allow themselves or their children to be vaccinated, there were many cases and several deaths. In the Mymensing Jail, of the total number admitted during the year, amounting to 1,944, 180 or 9·26 per cent. of the admissions were found to have been vaccinated, 1,189 or 61·11 per cent. to have been inoculated, 274 or 14·10 per cent. had small-pox, and 301 or 15·48 per cent. were unprotected.

Behar Circle.—The report from this Circle shows that of 583 cases of small-pox only 3 were protected, 2 by vaccination and 1 by inoculation, and 580 or 99·48 per cent. of the total number of cases were unprotected.

The subjoined statement exhibits, collectively, the figures illustrating the subject under consideration furnished above.

Circles.	Total number of cases of Small-pox.	Number protected by				Number Unprotected.	Ratio per cent. to total cases of the number				
		Vaccination.	Inoculation.	Natural small-pox.	Total.		Protected by Vaccination.	Protected by Inoculation.	Protected by natural Small-pox.	Total.	Unprotected.
Calcutta	451	96	116	......	212	239	21·28	25·72	......	47·01	52·99
Metropolitan Circles	936	67	100	4	171	765	7·16	10·68	·43	18·27	81·73
Suburbs of Calcutta	122	6	13	......	19	103	4·92	10·65	......	15·57	84·43
Eastern Bengal Circle	656	49	15	......	64	592	7·47	2·29	......	9·76	90·24
Behar Circle	583	2	1	......	3	580	·34	·17	......	·51	99·49
Total ...	2,748	220	245	4	469	2,279	8·00	8·92	·15	17·06	82·93

The foregoing facts and figures, carefully considered, will be found to furnish evidence in favour of Vaccination as possessing greater protective power than Inoculation; and to show that those protected by either process, but particularly by the former, are less liable to the ravages of small-pox than the entirely unprotected, or in other words, are not attacked by, and do not succumb to, the disease in such large numbers as the Unprotected.

SECTION VIII.

SANITARY WORKS (MILITARY).

256. The information under this section is not required from the Sanitary Commissioner for Bengal.

SECTION IX.

SANITARY WORKS (CIVIL).

MUNICIPAL EXPENDITURE ON SANITATION.

Total income of Municipalities and Objects of expenditure.

257. The income of the Municipalities in each district and the purposes for which it was expended are shown in the subjoined table:—

Districts.	Number of Municipalities and Unions.	Income in 1884, including balance from the last year.	Percentage of Income expended on— Sanitary Works. 1884.	1883.	Roads.	Sanitary Works including Roads.	Police.	Other requirements.
		Rs. A. P.						
Burdwan	5	2,05,751 0 0	51·50	50·39	7·63	59·13	...	16·22
Bankura	6	26,982 14 3	25·15	31·56	8·89	34·03	...	14·22
Birbhum	1	7,775 12 9	43·91	37·34	3·84	47·76	...	6·28
Midnapore	6	57,351 3 3	50·58	43·05	13·80	64·45	...	15·67
Hughli including Serampore.	14	1,68,828 5 11	34·04	20·81	18·01	52·06	...	15·46
Howrah	2	2,63,117 2 5	37·40	36·47	24·46	61·87	9·04	15·83
24-Pergunnahs ...	17	7,16,474 0 0	20·69	27·99	21·67	51·37	6·69	14·03
Khulna	3	12,204 13 7	17·44	11·32	18·04	35·48	...	16·93
Nuddea	10	90,808 0 0	27·66	27·84	26·58	53·80	...	14·71
Jessore	3	24,088 2 0	45·19	33·09	23·41	68·60	...	11·07
Murshidabad ...	4	1,02,183 10 5	36·15	39·32	10·76	46·92	...	16·81
Dinajpur	1	38,991 4 0	35·83	31·36	22·61	58·44	·01	14·04
Rajshahye	2	36,039 0 0	30·19	35·12	19·14	49·33	...	30·30
Rungpore	1	14,214 6 11	41·71	63·17	8·67	50·38	...	15·01
Bogra	2	13,625 0 0	21·03	28·94	34·20	55·22	...	19·58
Pubna	2	81,915 5 0	30·87	27·00	21·81	52·69	...	25·21
Darjiling	2	1,21,977 0 0	42·31	38·06	16·72	59·03	...	21·94
Julpaiguri	1	7,753 0 10	63·35	68·86	..	63·35	...	5·12
Dacca	3	2,25,783 4 1	53·47	18·86	21·50	74·97	...	5·15
Faridpur	3	21,070 9 0	25·89	35·48	11·29	37·19	...	20·78
Backergunge ...	6	30,122 0 0	25·86	24·28	23·52	49·38	...	15·15
Mymensing ..	7	53,041 0 10	18·67	17·92	23·76	37·43	...	12·28
Tipperah ...	2	24,653 0 0	38·98	40·07	16·87	55·85	...	24·66
Chittagong ...	2	52,951 0 0	28·95	22·55	38·52	67·48	...	22·64
Noakhali ...	1	10,901 14 4	23·27	21·30	14·71	37·98	...	4·13
Patna ...	11	2,29,941 7 7	46·26	24·55	16·39	62·66	...	11·35
Gya ...	12	1,08,457 10 2	37·61	26·31	15·37	52·09	...	17·66
Shahabad ...	6	56,827 0 0	48·13	42·55	19·73	67·86	...	15·00
Mozufferpore ...	5	60,019 9 11	26·55	26·39	32·01	58·57	...	19·70
Durbhanga ...	3	52,057 12 5	34·03	20·70	17·40	51·44	...	19·86
Sarun ...	3	59,228 12 9	34·24	51·34	13·87	48·11	...	24·51
Chumparun ...	2	21,533 2 4	43·48	33·03	13·59	57·07	...	9·59
Monghyr ...	3	57,650 0 0	44·89	46·93	23·92	67·81	...	16·79
Bhagulpore ...	2	54,823 3 0	46·25	40·74	28·42	74·68	...	6·19
Purneah ..	3	20,132 10 10	27·97	30·92	16·27	44·25	...	17·16
Sonthal Pergunnahs.	2	15,974 3 0	45·31	54·51	6·86	52·16	...	10·14
Maldah ...	2	14,567 0 10	40·49	36·83	8·19	48·69	...	39·21
Cattack ...	3	48,183 9 4	34·30	35·62	16·60	50·90	...	25·68
Puri ...	2	30,449 0 0	51·39	35·83	10·91	62·31	...	24·80
Balasore ...	1	10,410 15 8	36·21	49·75	19·13	55·34	...	11·84
Hazaribagh ...	2	17,090 9 10	52·17	53·10	11·18	63·36	·04	16·48
Lohardugga ...	4	21,470 14 10	38·36	38·45	17·38	55·75	...	20·06
Singbhum ...	1	3,690 15 8	35·[illegible]	38·35	23·08	58·59	...	8·10
Manbhum ...	3	20,475 8 5	29·52	36·73	11·58	41·10	...	6·15
GRAND TOTAL ..	175	32,78,326 0 2	37·60	34·48	19·17	56·77	2·19	15·67

From the above table it is seen that the total income of all the Municipalities amounted to Rs. 32,78,326 against Rs. 33,28,762 in the preceding year, showing a diminution of Rs. 50,436. Of this income 38 per cent. was expended on Sanitary Works (original and recurring) against 34 per cent. in the preceding year; 19 per cent. on Roads against 18 per cent.; 2 per cent. on Police against 3 per cent.; and 16 per cent. on other requirements against 15 per cent. Thus it will be observed that, notwithstanding a serious diminution of income, the apportionment for Sanitary Works was greater than in the preceding year. To this increment the towns in 25 of the 45 districts contributed at rates ranging from ·16 per cent. in Mozufferpore to 21·71 per cent. in Patna. The towns in the districts named below utilized the following percentages of their revenues in improving their sanitary status:—

	Percentage of income.		Percentage of income.		Percentage of income.
Julpaiguri ...	63·35	Monghyr ...	44·89	Murshidabad ...	36·15
Dacca	53·47	Birbhum ...	43·91	Dinajpur ...	35·83
Hazaribagh ...	52·17	Chumparun ...	43·48	Singbhum ...	35·50
Burdwan ...	51·50	Darjiling ...	42·31	Cuttack ...	34·30
Puri ...	51·39	Rungpore ...	41·71	Sarun ...	34·24
Midnapore ...	50·58	Maldah ...	40·49	Hughli including Serampore.	34·04
Shahabad ...	48·13	Tipperah ...	38·98	Durbhanga ...	34·03
Patna ...	46·26	Lohardugga ...	38·36	Pubna ...	30·87
Bhagulpore ...	46·25	Gya ...	37·61	Rajshahye ...	30·19
Sonthal Pergunnahs	45·31	Howrah ...	37·40	24-Pergunnahs ...	29·69
Jessore ...	45·19	Balasore ...	36·21	Manbhum ...	29·52

On the other hand, the towns in the districts of Mymensing, Khulna, Bogra and Noakholi did the worst in this direction, their percentages being only 13·67, 17·44, 21·03 and 23·27 respectively. In the remaining towns the percentages of income diverted towards sanitary improvements ranged from 25·15 to 28·95.

Details of Expenditure on Sanitation.

258. The special purposes for which the amount allotted for the Sanitation of towns (Rs. 12,32,789 against Rs. 11,47,930 in 1883, exclusive of Rs. 6,28,578, the cost of constructing and maintaining Roads) was expended are marginally indicated. Compared with the preceding year, commendable improvement is observable under all the heads, excepting Establishment and Water-supply. The decrease under the latter head is traceable to considerably larger amounts having been expended for the purpose during the preceding year in Burdwan (Rs. 1,10,519 against Rs. 74,972 this year) and in Darjiling (Rs. 10,523 against Rs. 3,737).

	Total cost.		Difference in 1884.	
	In 1884.	In 1883.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
On Conservancy, including Latrines	3,99,293	3,07,951	91,342	... ..
,, Conservancy Establishment ...	2,82,206	3,25,860	... ..	43,654
,, Drainage	1,05,973	96,097	9,876	... .
,, Water-supply	1,35,181	1,60,449	......	25,268
,, Disposal of the Dead ...	8,341	7,629	712	......
,, Markets and Slaughter-houses	24,042	16,533	7,509	.....
,, Vaccination	12,481	10,992	1,489	......
,, Treatment of the Sick ..	1,87,185	1,69,339	17,846	......
,, Other Sanitary Works ...	78,087	53,080	25,007	......
Total ...	12,32,789	11,47,930	84,859	... .
On construction, maintenance and repair of Roads	6,28,578	6,06,160	22,418	......
Total, including Roads ...	18,61,367	17,54,090	1,07,277	......

GENERAL PROGRESS IN SANITATION.

Description of Sanitary Works executed in Towns and Districts.

259. Details of the *original* Sanitary Works, excluding the recurring works incidental to every year, are furnished in Appendix IV to this Report. The subjoined abstract taken from this Appendix shows the amount expended for original Sanitary Works, the proportion this amount bears to the total income, and the general nature of the Sanitary Works executed in all the Sudder Municipalities and in those of the minor Towns in which the population numbers 10,000 and upwards. This abstract also indicates the Towns whose sanitary welfare was well attended to, and those in which this matter was more or less neglected. Of the rest of the minor Towns, the following expended nothing on works of the description under consideration:—Dainhat in Burdwan; Patroshair and Joypur in Bankura; Ramjibunpur in Midnapur; Mugra, Panduah, Bali, Utterpara, Kotrung and Koerganj in Hughli; North and South Barrackpur and Taki in the 24-Pergunnahs; Jessore; Goalundo in Faridpore; Burisal and Bauphal in Backerganj; Cox's Bazar in Chittagong; Sudharam in Noakholi; Comillah in Tipperah; Barrh, Futwa and Maner in Patna; Tikari, Sherghatti and Fatehpur in Gya; Dumraon and Bhubuah in Shahabad; Balasore; Garwa in Lohardugga; and Raghunathpur and Jhalda in Manbhum. The remaining towns expended, generally, insignificant sums, but these sums taken collectively amount to Rs. 64,249.

Districts.	Municipalities.	Total income.	Total expenditure on Original Sanitary Works.	Percentage of income expended on Original Sanitary Works.	Amount expended for *Original Sanitary Works* under the following heads— Drainage.	Water-supply.	Conservancy.	Disposal of the Dead.	Markets and Slaughter-houses.	Roads.
		Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Burdwan	Burdwan	1,71,827	73,852	43·10	... ..	73,852	......	.... .	......	... ..
	Raniganj	13,109	1,001	7·64	......	1,001	......	... .	......	... ..
	Kulna	11,009	743	6·69	255	......	......	......	......	488
Bankura	Bankura	10,683	1,190	11·20	969	......	......	......	......	221
	Bishenpur	4,915	521	10·60	521	......	. ....	......	......	.... .
	Sonamukhi	5,442	17	·31	17	. ....	......	... ..	......	......
Midnapore	Midnapore	28,610	468	1·63	393	25	......	......	......	50
	Ghattal	7,744	1,371	17·70	... ..	......	500	......	......	871
	Chundrakona	5,364	1,100	20·49	......	... ..	......	... ..	......	1,100
Hughli including Serampore	Hughli	61,108	474	·77	474	......	......	......	......	......
	Shambazar	2,276	200	8·79	......	... ..	......	......	......	200
	Jahanabad	2,584	192	7·43	......	......	.....	......	......	192
	Serampore	52,191	2,031	3·89	......	......	1,255	......	......	776
	Baidyabati	20,139	1,087	5·39	293	......	794	... ..	......	......

Districts.	Municipalities.	Total income.	Total expenditure on *Original Sanitary Works.*	Percentage of income expended on *Original Sanitary Works.*	Amount expended for *Original Sanitary Works* under the following heads— Drainage.	Water-supply.	Conservancy.	Disposal of the Dead.	Markets and Slaughter-houses.	Roads.
		Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Howrah	Howrah	2,51,906	2,112	·83	......	311	891	......	......	910
	Bali	11,211	1,911	17·04	......	......	480	......	......	1,425
24-Pergunnahs	Suburbs of Calcutta	5,20,336	6,616	1·24	277	......	57	......	......	6,282
	South Suburban	30,971	3,394	10·95	1,444	......	......	......	......	1,0[illegible]
	North ditto	24,158	6,013	24·89	839	......	......	3,965	......	1,2[illegible]
	Busirhat	9,791	1,696	17·32	182	1,514	......	......	......	......
	Naihatti	18,035	5,444	30·18	2,444	......	......	......	......	3,000
	Rajpore	8,841	3,667	41·47	550	......	......	......	......	3,117
	Baduria	6,091	586	9·62	250	......	......	......	......	336
	Barasat	18,229	3,049	16·72	1,049	......	......	......	......	2,000
	South Dum-Dum	11,223	621	5·53	......	......	......	......	......	621
Nuddea	Kishnaghur	27,698	2,721	9·82	2,503	150	......	......	......	67
	Santipore	25,076	9,523	37·97	1,098	......	1,547	......	......	6,878
	Nobodip	7,714	1,531	19·84	53	......	......	......	......	1,477
Murshidabad	Berhampore	37,145	946	2·54	726	220	......	......	......	......
	City Murshidabad	49,540	1,019	2·05	897	......	120	......	......	......
	Jungipur	8,423	567	6·73	......	......	......	......	......	567
	Kandi	7,075	1,081	15·27	222	......	......	......	......	859
Dinajpur	Dinajpur	38,991	7,046	18·07	......	......	3,102	......	......	3,944
Rajshahye	Beauleah	23,222	464	1·99	......	......	......	......	......	464
Rungpore	Rungpore	14,234	874	6·14	......	......	208	......	......	666
Pubna	Serajgunge	16,864	4,881	28·94	......	693	258	......	......	3,930
	Pubna	15,052	1,778	11·81	......	917	......	......	......	861
Dacca	Dacca	1,00,007	10,373	5·38	9,461	18	519	......	......	575
	Narainganj	30,800	5,365	17·41	2,973	82	76	246	......	1,988
	Manickganj	4,976	1,457	29·28	......	910	......	......	......	547
Faridpore	Faridpore	10,022	271	2·70	......	......	76	......	......	195
	Madaripore	7,708	1,819	23·59	88	50	......	......	......	1,681
Backergunge	Barisal	14,962	878	5·86	232	......	570	......	......	76
Mymensing	Tangail	3,915	412	10·52	......	......	......	......	......	412
	Jamalpore	6,343	1,575	24·83	......	1,575	......	......	......	......
	Kishoreganj	5,260	2,248	42·73	......	......	......	......	......	2,248
	Nasirabad	22,939	981	4·27	......	......	......	......	......	981
Chittagong	Chittagong	49,319	6,361	12·89	5,000	720	641	......	......	......
Tipperah	Brahmanberia	7,544	2,337	30·97	268	360	1,012	......	......	697
Patna	Patna	1,41,903	12,085	8·51	10,254	......	......	......	......	1,831
	Behar	16,641	1,399	8·40	405	......	265	......	......	729
	Mokamah	11,718	6,467	55·19	6,467	......	......	......	......	......
	Dinapore	20,[illegible]88	4,151	20·66	3,651	......	500	......	......	......
	Khagoul	7,564	476	6·29	......	......	360	......	......	116
Gya	Gya	80,289	4,025	5·01	2,812	...	1,213	......	......	......
Shahabad	Arrah	22,086	3,553	16·08	......	3,553	......	......	......	......
	Sasseram	13,404	1,159	8·64	...	197	96[illegible]	......	......	......
	Jugdispore	3,067	1,056	34·46	20	......	......	......	......	1,036
	Buxar	6,621	1,146	17·30	64	290	......	......	......	792
Mozufferpore	Mozufferpore	39,951	7,412	18·55	264	114	288	......	169	6,577
	Hajipur	8,111	2,441	30·09	......	......	......	......	......	2,441
	Lalganj	3,655	515	14·09	......	......	......	......	......	515
Durbhanga	Durbhanga	32,689	3,955	12·09	......	......	120	......	......	3,835
	Madhubani	12,005	1,358	11·22	118	......	20[illegible]	......	1,000	40
	Rosorah	7,274	496	6·81	63	50	383	......	......	......
Sarun	Chupra	34,237	1,201	3·50	......	......	543	......	......	658
	Sewan	7,689	1,922	24·99	462	95	......	......	......	1,365
	Revilganj	17,303	2,813	16·25	180	739	......	......	......	1,893
Chumparun	Bettiah	11,004	2,892	24·73	1,738	......	......	......	......	1,154
	Motihari	9,830	332	3·37	332	......	......	......	......	......
Monghyr	Monghyr	40,066	764	1·86	51	483	76	......	......	155
	Jamalpore	16,034	846	5·07	423	423	......	......	......	......
Bhagulpore	Bhagulpore	48,495	4,080	9·65	3,166	......	1,171	100	243	......
Purneah	Purneah	19,615	905	4·61	672	......	......	......	......	233
Maldah	English Bazar	11,343	1,576	13·89	902	......	...	......	......	684
Cuttack	Cuttack	38,396	5,842	15·21	2,283	610	918	......	262	1,769
	Jajipur	4,065	149	3·66	149	......	......	......	......	......
	Kendrapara	5,673	499	8·79	......	......	......	......	......	499
Puri	Puri	30,282	7,100	23·44	3,503	2,185	1,412	......	......	......
Hazaribagh	Hazaribagh	9,382	1,400	14·92	...	1,100	300	......	......	......
	Chuttra	7,708	869	11·27	869	......	......	......	......	......
Lohardugga	Ranchi	12,010	2,604	21·68	273	267	100	......	......	1,964

The observation which a review of the above table forces upon attention is that the Suburbs of Calcutta, where sanitary reforms are greatly—I should say imperatively needed—expended only 1·24 per cent. of its large income on *original Sanitary Works.*

260. Of the Sanitary Works which were under consideration during the year, and most of which are briefly referred to in the foregoing abstract, those which claim attention as important sanitary measures calculated to confer much benefit are the following:—

IMPORTANT SANITARY WORKS.

In the Towns.

Water-supply.—The construction of the *Burdwan* water-works has been completed, and they were formally opened by His Honor the Lieutenant-Governor on the 4th of November 1884. The regular supply of water commenced from the 1st of December. The measure has proved, it is said, to be of great benefit to the inhabitants of the northern portion of the town in which the pipes have been laid and hydrants set up. At first many of the inhabitants were unwilling to use the filtered water, but the prejudice soon died away, and now about 99 per cent. of the inhabitants have been freely using it. Many of the respectable inhabitants who were opposed to the water-works scheme on the ground that there was no necessity for it at Burdwan have candidly admitted that they had been mistaken, and that the water-works are really a great boon to the inhabitants. Owing to the scanty rainfall during the last two years many tanks have dried up, and there would have been scarcity of water in some parts of the town, if the water-works had not been completed. The supply of water is ample, and the Government Chemical Examiner's opinion is that, "the water is of good potable quality." The Commissioners have sanctioned house connections, which will be soon established. There are altogether 60 hydrants, but applications for more have been made by the inhabitants. It is hoped that early steps will be taken to confer a similar boon on the people in the southern side of the town, who compose about a third of the population, and who continue to obtain their water-supply from the Banka nulla and Eden canal. But the conservancy of the Banka nulla, from which the water-supply is taken, is very bad. The Civil Surgeon, after a tour of inspection, remarks that, a great deal of jungle overhangs the nulla, and a considerable quantity of vegetation, in all stages of growth and decay, are in its bed. At many places numerous strata of black vegetable mould were seen on the banks where slips have occurred. Large herds of cattle are permitted to swim across the nulla, which must cause considerable pollution, and crushing away of the banks is inevitable. Below where the water is taken off a great part of the town sewage finds its way into the Banka, and when the water at the back of the station gets low, very often a most offensive smell arises from its bed. *Hughli.*—Mr. Finlay, the manager of the Wellington Jute Mills in the Serampore Municipality, has recently had a large cistern constructed capable of containing 73,000 gallons of water from the river, of comparatively pure quality, for the benefit of the work-people in the Mahesh and Rishra bustees. *Howrah.*—The Commissioners of this Municipality have now made arrangements for the preparation of plans and estimates of an approved scheme of water-supply in which the other riparian towns are to join. The estimates, &c., are to be undertaken at a cost of Rs. 3,168 by Mr. Scott, Executive Engineer, whose services for this project have been lent by Government to the Municipality free of cost. At an assembly of delegates from the Kotrung, Serampore, Bali and Baidyabatti Municipalities, the President of the Howrah Water-supply Committee enquired if they were authorized by their respective Municipalities (who had been advised of the matter before) to agree to bear a share of the cost of the plans and estimates. The representative of the Baidyabatti Municipality stated that the Commissioners of that Municipality would contribute, and the other delegates agreed to advise the Municipalities which they represented to contribute. The *Bali* Municipality subsequently consented to a *pro rata* contribution for the purpose. *Rajshahye.*—Opportunity was taken, at the height of the flooding of the Ganges during the rainy season, to flush out the tanks and wells, and to wash out the drains and stagnant pools in the Beauleah and Nattore Municipalities, and thus a thorough cleansing was effected. The inhabitants of the villages in the neighbourhood of these water reservoirs availed themselves of the purer water thus secured, by cutting drains to various distances, and in some cases through public roads and embankments, to introduce the water into the tanks, which had dried up owing to the insufficient rainfall of the past three years. In the *Dacca* town, the

further improvements to the filter beds, calculated to prevent leakage, were completed, and a tunnel giving access at all times (except during the highest floods) to the suction pipe was constructed. The Civil Surgeon believes that now the leakage of subsoil water into the reservoir of clean water has been effectually prevented. An out-house for the water-works, and a man-hole for the south tunnel have also been constructed. The above works cost Rs. 3,656-6-9. Moreover, a boundary wall to the water-works premises has been erected at a cost of Rs. 987-2-6. The land required for building thereon additional settling tanks and filter beds, for the purpose of extending the water-supply, has been acquired and cleared of all huts and buildings. The munificent Nawab Assanoollah has, in commemoration of the visit to India of their Royal Highnesses the Duke and Duchess of Connaught, extended the water-works northwards up to Nawabpore road. The locality along this line is a crowded one, and its water-supply used to be obtained from wells and tanks. Considering the extremely bad condition of these wells and tanks, this undertaking has undoubtedly been a great boon to the inhabitants. The Nawab expended Rs. 11,000 on this work. Mr. A. J. Hughes, the Officiating Superintending Engineer, Sone Circle, evinced great and commendable interest in the sanitary welfare of the *Mozufferpore* Municipality. Among his suggestions for improvement was one relating to water-supply, which is a matter of urgent necessity in this town. He proposed to the Municipal Commissioners to utilize the water of the Gunduck river for drinking purposes, the purity of which was established by use in the jail. This river flows directly under the town, and his scheme was to establish a pumping station on a piece of waste land belonging to the Maharaja of Durbhanga; to raise the water of the river there and deliver it into suitable settling tanks; to cause the water to flow by gravitation from the settling tanks into filters and be stored in a covered masonry reservoir, from which it could be pumped for delivery to the town through hydrants or stand-posts fixed in different parts thereof. House connections were also to be allowed. His scheme was calculated to deliver about 5 gallons of pure filtered water per head of the population, sufficient for drinking and cooking purposes. It is to be regretted that the Municipal Commissioners negatived this very important measure, which would, no doubt, have benefited both the rich and the poor. They were of opinion that excellent water is procurable from the wells in the town, while the water of the little Gunduck is dirty and contaminated, which they say will not be touched by the people. They, moreover, stated that a scheme which would cost Rs. 2,10,000 for plant, &c., and Rs. 24,609 per annum for interest and working expenses, was quite beyond their means, considering that their annual income was about Rs. 32,000. In the *Bhagulpore* town, the water-work project, referred to in the report of 1882, has been sanctioned by Government, and material and plant are being collected for carrying it out. The Government has lent the services of the Superintending Engineer and his subordinates for the undertaking free of cost. The work, it is believed, will be completed within 14 months.

In the Districts.

261. Reports regarding the analyses of water of all places from which it is sent to the Chemical Examiner to Government are now regularly sent to me for approval and opinion. The most important of these is the water-supply of the Nuddea district, which the Collector of that district sent to the Chemical Examiner with a set of questions relating to it [prepared in consonance with the orders of Government No. 32 (Medical), dated 19th January 1880] to be answered. As the prevalence of malarious fever and other zymotic diseases throughout Nuddea is generally stated by those experts who have given their attention to the subject to be due to an impure water-supply, it was thought that wells, properly constructed, can give the people pure water. It was, therefore, proposed to construct wells at some selected sites to demonstrate how far they may be safely used as a source of rural water-supply. The question was referred to me by the Chemical Examiner, and I urged that officer to analyse the water sent. This analysis was the more necessary because, for some reason which has never been clearly explained, the people of the district will rarely use well water, saying that it gives them cold and nasal catarrh. It was, therefore, desirable to know if the water is loaded with salt, or otherwise so impure as to tend to the production of such complaints. The

enquiry is at present incomplete. *Rajshahye.*—The mouth of the Narod river in this district, which had silted up, was excavated at a cost of Rs. 1,000, with a view to afford the people good water from the Ganges, and to inundate the bordering villages and the bhils situated within easy reach. The mouth of the Dhobapara khal, which joins the Hoja river with the Moishakhan river, and of two other water-ways, one through Putia thana and the other from Achintola, all of which had silted up, were opened. By this measure the annual flooding of the Moishakhan river was partially restored, and the stagnant Hoja, to which was ascribed the prevalence of the epidemic fever of a virulent and persistent type referred to in paragraph 129 of this Report, was to some extent flushed. It is under consideration to deal with the Mudungachi embankment so as to enable the country to be flooded for the purpose of both irrigation and the cleaning out of tanks. The *Sarun* canal was improved at a cost of Rs. 20,000.

262. *Drainage.*—The improvement of the drainage of the *Raniganj* town in Burdwan is awaiting the report of the Engineer on the proposed scheme, the levels having been taken. At *Khulna*, the head-quarters of the district (converted into a Municipality at the close of the year), the drainage was diverted from its previous channels towards new channels with a view to improve the sanitation of the place, at a cost of Rs. 16,997 to the Road Cess Department. The work has progressed to a good extent. In *Lalbagh* or *City Murshidabad* the drainage works at Azimganj, commenced in 1883, have been completed. and the outlet, it is said, is now effective. Owing to want of proper flushing the two main channels within the Shamnagar and Mohimapur wards did not work well through the pipes, which are only 6 inches in diameter. The pipes are already a good deal blocked up with silt, and there is no means of cleaning them unless they be taken up and relaid---a work requiring much attention and enormous cost. Proposals referring to proper drainage schemes for Jeagunj and *Azimgunj* and to the improvement of the present drainage system of the *Murshidabad* town proper, estimated to cost Rs. 30,000, are under consideration. Estimates and plans of the scheme for improving the drainage of the *Dinajpur* town, in connection with the general drainage project suggested by the Sanitary Commision of 1878, have been submitted to Government for sanction. The Maharaja of Dinajpur has promised to defray the cost of the project, and it is to be called the "Thompson Drainage Scheme," with a view to commemorate the visit to Dinajpur of His Honor the Lieutenant-Governor of Bengal. The scheme for improving the drainage of the *Chittagong* town, referred to in the Report for 1883, has not yet been taken up. With reference to this subject the Civil Surgeon writes:—"In my last report I mentioned that Government had taken up a very important drain running through a very crowded part of the town. Surveys, reports, estimates, &c., were submitted by the Public Works Department, but, as usual with these things, the labour expended in making the plans, &c., has all been wasted in some pigeon-hole at head-quarters. The scheme for re-digging the Chaktai nulla has also fallen out of sight. This, if carried out, would have immensely improved the drainage of a very large area of low-lying ground to the great advantage of the inhabitants therein. In fact, nothing can be done to drain this area till the Chaktai is re-dug." The question of radically improving the drainage of the *Patna* Municipality was under consideration during the year. The Municipal Engineer was engaged throughout the rainy season in investigating the matter, and has drawn up some excellent reports on a general drainage scheme. But it appears that it is beyond the means of the Municipality to give effect to the undertaking, and that it would entail the raising of a large loan, take years to complete the work, and involve loss of money in surveys, &c. An alternative plan for providing the whole town with pucca spoon-shaped drains to carry off rain water only is under consideration. The work of this year consisted of constructing surface drains in three of the mohullas, and completing (1) the largest pucca main drain, which conveys the drainage of an immense area under the railway line and then discharges it into low ground; and (2) the most important pucca sub-main drain, which conveys the drainage from the densely-populated parts near the chowk to the abovementioned main drain. These works have, it is said, already proved of the greatest service. Their extension is necessary, but want of funds precludes this being done.

In the Towns.

263. In the *Midnapore* district Rs. 88,600 were expended on the drainage of the Supai khal. Further improvements to the drainage of the fever-stricken district of *Nuddea* were effected, the work consisting of the construction of a good many arched culverts and wrought-iron girder bridges on masonry abutments; of the completion of the works on the road from Chagda railway station to Bongong at a cost of Rs. 1,346; and of the construction of four arched culverts on the Chapra and Nishchindpur road at a cost of Rs. 1,967. These culverts span drainage channels. Many drainage schemes were prepared during the year, and some of them have been sanctioned, but none of them have yet been carried out for want of funds—and some elaborate schemes are under preparation. In the *Sonthal Pergunnahs* district the question of draining the stagnant marsh to the south of Rajmehal is still under consideration. Plans and estimates have been prepared, and enquiries are being instituted as to how far the proprietors of the land are prepared to contribute towards the project; but there are so many petty interests involved that it is doubted whether they will combine in carrying out the work. This is much to be regretted, for the Deputy Commissioner says that, "the extreme unhealthiness which has led to the almost total depopulation of the tract once teeming with a wealthy Mussulman population, is said to be almost entirely due to the existence of this swamp, which was formerly an old bed of the Ganges, and became converted into a jheel when the river receded. The high bank then thrown up cut off the drainage into the river, and the water has remained stagnant in it ever since, now some 40 or 50 years. The bottom of the swamp, which is partially exposed during the dry season, consists, it is said, of some 10 to 15 feet of decaying vegetation. There is little or no open water in the jheel, which is covered with a long reed."

In the Districts.

264. *Bustees.*—In the *Suburbs of Calcutta* the improvement of Woolfut-bagan bustee has been taken in hand; the Motijheel and Kantal-bagan bustees have been inspected preliminary to sanitary improvements being carried out, and six other bustees, among which are the gowalla bustees regarding which it is proposed to establish public cow-sheds, have been surveyed. Regarding bustee improvements in the Suburban Municipality, His Honor the Lieutenant-Governor has remarked that "it is imperatively necessary that more rapid and effectual progress should be made in reclaiming the bustees and otherwise improving the sanitary condition of the town; and the Commissioners should understand that this a subject to which the Government attaches the highest importance and to which their most earnest attention must be given." In the *Howrah* town the Rajapara, Kozedangali and Kajal-bagan bustees have been improved.

265. *Conservancy.*—The wire tramway in the *Darjiling* Municipality, estimated to cost Rs. 7,841, is in progress. In the *Dacca* Municipality three of the abominable "Gors" were completely filled up. *Patna* Municipality.—It is gratifying to find that after much opposition and controversy, the house-scavenging scheme has been established in the City Proper, which is most thickly populated. Five thousand, or half the number of private privies are being cleaned, and the night-soil from them is trenched in grounds specially rented for the purpose.

266. **Port of Calcutta.**—The Health Officer had to draw the attention of the authorities eight times to the neglect of the sanitary arrangements on the Calcutta foreshore and only once with regard to the Howrah foreshore.

Calcutta and Howrah Foreshores.

267. It does not appear that any progress has been made in providing additional latrines on the town side of the Strand road beyond the selection of sites for the purpose, although the Government drew the attention of the Calcutta Municipal Corporation to the subject.

Public Latrines on Calcutta Strand Road.

268. The arrangements under this head were satisfactory, except that once the attention of the municipal authorities had to be drawn to the use of the tanks with improperly fitted covers, which exposed the water to the risk of contamination.

Water-supply to the Shipping.

269. Proper attention appears to have been paid to this matter, as no complaints were received from the Shipping of annoyances caused by floating corpses.

Corpses and Carcasses in the River.

MISCELLANEOUS SANITARY OPERATIONS DURING THE YEAR.

Extension of Sanitary Laws.

270. The great event of the year under this head was the passing of the new Bengal Municipal Act III of 1884, which contains excellent sanitary regulations relating to sewage, offensive matter, rubbish, privies, drains, *sections* 186 to 197 and 232; to bathing and washing places and tanks, 198, 199 and 200; to obstructions and encroachments on roads, 201 to 208 and 233 to 235; to general conservancy and improvements, 209 to 219; to excavations, 232; to buildings and blocks of huts, 236 to 248; to sale of food, drink and drugs, 249 to 253; to burial and burning grounds, 254 to 260; to offensive and dangerous trades and occupations, 261 to 265; to water-supply, 299 to 307; to lighting with gas, 308 to 319; to construction and cleansing of latrines, 320 to 334; to markets, 335 to 345; to registration of births and deaths, 346 to 349; and to framing of bye-laws, 350 to 352. This enactment was given effect to on the 1st of August 1884, when all the first and second class Municipalities in which the old repealed Municipal Act V (B.C.) of 1876 was in force came under its operation without distinction as to classification, and the unions also ceased to be such. The law was also extended to Khulna, constituted a Municipality during the year, and to the Julpaiguri and Assensole towns, in which the old Act was never in operation. At first the whole of the new Municipal Act was not, in accordance with the provisions made in it, extended to many Municipalities, but the omitted sections are being gradually brought into operation in them according to requirements, and for some towns bye-laws, framed under the Act, have been sanctioned.

The places to which Act IV (B.C.) of 1873, rendering registration of births and deaths compulsory, were extended are mentioned in section V of this Report, and those in which Act IV (B.C.) of 1865, prohibiting the practice of inoculation, and Act V (B C.) of 1880, rendering vaccination compulsory, were brought into operation, in section VII.

The following enactment was also passed :—Act I (B.C.) of 1884, further amending the "Puri Lodging House Act," IV (B.C.) of 1871.

Another important enactment calculated to benefit sanitation greatly is the Bengal Local Self-Government Act, which was passed by the Bengal Legislative Council in April of the current year, and is awaiting the sanction of the Supreme Government to become law. The District Boards appointed under this law are to provide for the proper sanitation of the districts, to appoint Sanitary Inspectors, to provide a proper and sufficient supply of water, to provide for and supervise vaccination, to appoint Inspectors of Vaccination who are to exercise the powers and perform the duties assigned to the Superintendents of Vaccination under the Bengal Vaccination Act, 1880, to take measures for the relief of famine, to control and supervise dispensaries or hospitals, to submit returns of births and deaths to the Magistrate, and to undertake and carry out any local work likely to promote the health, comfort, or convenience of the people otherwise not provided for. The Union Committees appointed under the same law are to control, construct, and maintain roads, to maintain and manage dispensaries, to provide for the registration of births and deaths and submit to Local Boards returns thereof, to provide for sanitation, to control all drains and other conservancy works, and to control and manage the water-supply, all these work being performed within their Unions.

Qualifications of Sanitary Inspectors and Inspectors of Vaccination appointed under the Local Self-Government Act.

271. In connection with the above law, I submitted, at the request of Government, my opinions regarding the qualifications of Sanitary Inspectors and of Inspectors of Vaccination to be appointed by District Boards. With regard to Sanitary Inspectors I said that they should be men of some medical training, who have qualified as Native Doctors or Hospital Assistants in the Campbell, Patna, Dacca, or Cuttack Medical Schools, or in the Medical College of Calcutta; that men without medical education, but who had been employed for a considerable time in Municipalities as Conservancy Overseers and had exhibited physical fitness and intelligence in the performance of sanitary inspections, might also be employed; and that in any case some medical or sanitary training and perfect physical fitness must be insisted on. With respect to Inspectors of Vaccination, I stated that they should be men who have been well-trained in the different Vaccination Circles and are certified

as qualified for the post of Inspector by the Superintendent of the Circle from which they come; that they must be well acquainted with the natural history of the vaccine disease, the mode of operating, the preservation and storing of vaccine lymph, and the steps to be taken for the suppression of outbreaks of small-pox; and that they must be conversant with the vaccine returns required by Government and the enactments relating to inoculation of variolous matter and compulsory vaccination. I also submitted that it was essential that both the above classes of officers must be men of good character, as, unless very strictly supervised, they will have opportunity of extorting money from the people. In connection with the above suggestions the following draft rule has been framed for adoption when the Local Self-Government law is brought into operation:—

"*Section* 138, *clause* (*g*,) *Sanitary and Vaccination appointments.*—The qualifications for the Sanitary Inspector and of the Inspector of Vaccination shall be such as the Sanitary Commissioner may from time to time prescribe or approve."

The following draft rules relating to matters therein alluded to were also approved by me:—

"*Section* 138, *clause* (*n*), *Sanitation.*—Before drawing up the estimate of annual expenditure it shall be the duty of the District Board to consult the Sanitary Commissioner as to the sanitary works or improvements which are most urgently required in the district.

"2. No original sanitary work estimated to cost, or which is likely to cost, more than Rs. 500 shall be commenced until the approval of the Sanitary Commissioner has been obtained.

"3. It shall be lawful for the District Board to institute a prosecution, or to take other legal action, for abating any public nuisance involving actual danger to the health of the inhabitants of any part of the district.

"4. The District Board, or any officers authorized by them on their behalf, may, between sunrise and sunset, after giving 24 hours' notice in writing, enter upon and inspect any immoveable property in regard to which it has been alleged that a public nuisance exists involving actual danger to the health of the inhabitants of any part of the district."

Deputy Sanitary Commissioner, Metropolitan Circles, proposed to be *ex-officio* Municipal Commissioner of the Suburban Municipality.

272. As there was no provision in the amended Bengal Act III of 1884 whereby the Government may appoint the Sanitary Commissioner an *ex officio* Municipal Commissioner of Municipalities in the Province, I suggested to Government that it would be useful to nominate the Deputy Sanitary Commissioner of the Metropolitan Circles as a Commissioner in the Suburban Municipality of Calcutta, as during the recess season he might give much attention to sanitary matters in the Suburbs and afford advice and assistance to the Chairman and the Commissioners.

Submission of annual returns to Inspector-General of Civil Hospitals, showing how Sanitary and Vaccination duties have been performed by Civil Surgeons. These returns serve important sanitary purposes.

273. Under orders No. 1327, dated the 11th December 1884, I am required to forward an annual statement to the Inspector-General of Civil Hospitals, indicating the manner in which the Civil Surgeons performed their Vaccination and Sanitary duties, to enable that officer to submit to Government confidential reports regarding the officers in question annually. In order that I may be in a position to furnish this report, I issued a circular to all Civil Surgeons requiring them to submit quarterly reports as to the manner in which they performed such duties. These reports are being forwarded, and they serve very important sanitary purposes. In the first place they naturally induce the Civil Surgeons to look after the sanitary interests committed to them systematically, in order that they may be in a position to submit a proper report; and in the second place I am kept informed of the progress vaccination is making, of the sanitary condition of the towns, what improvements have been effected, and what diseases have prevailed or are prevailing in them with noticeable severity. I am thus enabled to take early corrective action in these matters. It is hoped that the registration of births and deaths will also be benefited by this measure.

Summary of recommendations made by Commission appointed to enquire into the sanitary condition of Calcutta.

274. Public attention being directed to the inadequate measures adopted by the Calcutta Municipal Corporation for the maintenance of the sanitary condition of the town, the Lieutenant-Governor, in exercise of the powers conferred upon him under section 28 of Act IV (B.C.) of 1876, appointed, under orders, Municipal Department, No. 1341T—M, dated the 3rd September 1884, and Government Notification of 14th August 1884, a Commission consisting of myself and the Honourable H. Beverley, associated with Mr. Cotton, appointed by the Calcutta Municipal Corporation, to enquire into and report on the adequacy or otherwise of the provisions made by the Commissioners for the cleansing and conservancy of the town, and to state whether these are defective to an extent likely to be prejudicial to the health of the inhabitants of the town or any part thereof, and, if such should be the case, to specify what further provision should be made for that purpose up to the end of 1885-86, with an estimate of its cost. An exhaustive enquiry was made into all matters regarding drainage, water-supply, new roads, bustee improvements, and general conservancy, in connection with statistics of mortality from fevers, typhoid fever, cholera, bowel-complaints, small-pox and other causes, and a Report was submitted to Government on the 19th of January 1885. The following is a summary of the recommendations made in that Report.

Under the head of *Drainage* it was proposed—1 That unfiltered water be laid on to as many sewer summits as possible with a view to the more effectual flushing of the pipe-sewers. 2 That an addition of from 5 to 10 per cent. be made to the establishment for cleaning the sewers, with a view to the more frequent examination of the pipe-sewers. 3 That the connection of house and surface drains with the sewers be pushed on more rapidly. 4 That the supervision of house drainage be improved. 5 That the underground system of drainage be extended to Hastings. 6 That the drainage of Bagh Bazar be taken into early consideration. 7 That the Mahratta ditch be obliterated.

In regard to *Water-supply*—8 That greater economy be exercised in the use of filtered water for road watering and flushing drains and latrines. 9 That more stand-pipes be erected in bustees. 10 That the extension works be pushed on as rapidly as possible. 11 That more rapid progress be made in the distribution of unfiltered water in the principal streets. 12 That foul tanks be filled as fast as possible under the present system. 13 That foul tanks which cannot be filled be dewatered and guarded in the hot season. 14 That section 233 of the Act be more strictly enforced. 15 That some restriction be placed on making excavations. 16 That the Corporation obtain power to fill wells and to forbid the sinking of wells in unwholesome localities. 17 That the river water used at the bathing-platforms be periodically analysed. 18 That at least seventy-five bathing-platforms in all be constructed before the close of the year 1885-86.

As regards *Latrines*—19 That wherever possible privies should have unfiltered water laid on and be connected with the sewers. 20 That the public latrines be made free. 21 That separate latrines be constructed for women. 22 That zemindari latrines be connected with the sewers and with the water-supply. 23 That more public latrines be erected. 24 That more urinals be erected. 25 That the supervision in the night-soil department be improved. 26 That better provision be made for the removal of cowdung either through the sewers or by carts.

In respect to *Roads and Conservancy*—27 That the roads in the north of the town be provided with side drains. 28 That the road-scraping establishment be increased by 20 per cent. 29 That the road-sweeping establishment be increased by 20 per cent. 30 That the establishment for removing horse droppings be increased. 31 That the number of conservancy carts and cattle be increased. 32 That the railway platform accommodation be increased and improved. 33 That the rolling stock of the railway be increased. 34 That the supervising agency in the roads and conservancy department be strengthened. 35 That all the surface conservancy be placed under an executive Health Officer.

And *generally*—36 That the registration of births and deaths be placed more directly under the control of the Health Officer. 37 That the Suburbs be placed under the same Municipal administration as the town.

Traffic in Rags at Railway Stations how to be controlled.

275. In connection with a question regarding the traffic of rags at Railway Stations which was supposed to have occasioned an outbreak of cholera among the employés of the paper mills at Gwalior, I submitted that I agreed with the following recommendations of the District Traffic Superint ndent of Tundla for regulating so objectionable a traffic; that these recommendations might with advantage be introduced at all stations on the various lines of Railway in Bengal; and that all rags on delivery at paper mills should be disinfected by heat or otherwise. The Government, approving of the recommendations, cause them to be put into operation on all Railways in Bengal:

(1) That senders load them (the rags) themselves.
(2) That they on no account be taken to the goods sheds or wharves, but be deposited quite separate on some unfrequented spot.
(3) That senders unload under the conditions of No. 2.
(4) That not more than 24 hours be allowed free of demurrage.
(5) That demurrage, if incurred, be at a greatly enhanced rate.
(6) That all wagons used for the traffic be immediately fumigated when emptied.

Water-supply in the Chief Stations in the Eastern Bengal State Railway examined.

276. During the year I directed the Deputy Sanitary Commissioner, Metropolitan Circles, to have the water-supply at the chief stations on the Eastern Bengal State Railway line in Nuddea examined with regard to quantity, sources, apparent means of pollution, &c. It was ascertained that the water-supply was bad almost all along the line, and no attempt made to procure good water for the passengers. At the *Goalundo station* there is a tank into which water is pumped from the river Pudda. The water is not bad, but is seldom used, as this being the terminus of the line, people do not stay for refreshment. At the *Kushtea station* the unfiltered water of the Gorai river is supplied to the Native passengers and filtered water to the European passengers only. At the *Jugolee station* there is a tank on the banks of which rank vegetation and trees were seen. During the dry weather the water in this tank is subject to decomposition from the fallen leaves, &c. At the *Porada station* water is supplied to the passengers from a tank in the adjacent village, without being filtered. This tank is used for both bathing and washing purposes. At the *Chuadanga station* the water of the locomotive tank is supplied to the passengers unfiltered. The banks of this tank were filthy, and it received the washings from the huts in its vicinity, and in winter, when it almost dries up, there is great scarcity of water, as there is no other tank at a convenient distance from the station. At the *Bugoola station* there is a tank containing fairly good water, but it is covered with aquatic plants, and in April, May and June, before the commencement of the rains, there is very little water in it, which, moreover, is contaminated with decaying vegetation. Sometimes the passengers are supplied with water from a pucca well in the police-station close by. This water is good. At the *Chogda station* water is supplied from a tank which is surrounded by trees and used for bathing and washing purposes. During the winter, when this tank dries up, water is procured from another large tank a quarter of a mile away, but this tank is also used for bathing and washing. At the *Kanchrapara station* water is supplied from the locomotive tank, which is connected with a khal communicating with the Bhagiruthi river. But this tank is covered with aquatic plants. At the *Naihatti station* the water of the Hughli river is supplied after being settled with alum. At the *Barrackpore station* water is supplied to the Native passengers from a tank after being filtered and to the Europeans from a hydrant a mile away from the station. The water-supply in the minor stations is throughout bad and unwholesome.

This matter was reported to Government with a recommendation that deep wells covered over, from which the water could be raised by pumps, be constructed at each station, and that at the Barrackpore station a stand-pipe connected with the Barrackpore water-supply be put up. From the reply of the Director-General of Railways, to whom the question was referred, it

appeared that, while the water-supply is defective and bad at nearly every station, the only action taken by the Manager of the Railway was the sinking of *one* Norton's tube well at Kanchrapara, and that it is intended to enlarge and enclose the tanks at Bugoola and Chuadanga. The steps taken by the Manager are quite inadequate to meet the great evil complained of and carefully enquired into. The matter requires the serious notice of Government.

Planting of Trees in Darjiling Municipality.

277. I was asked during the year by the Commissioners of the Darjiling Municipality for my views regarding the planting of trees within the Municipality. I stated in reply that in my opinion the roads generally in a sanitarium like Darjiling, where the sun is tropical in power, should be planted so as to afford abundant shade to invalids and others moving about during the day, when it is most advantageous for them to spend all available hours in the open air. (2) That these trees should not be planted so closely as either to influence the movement of air, or lead to permanent dampness, or obstruct easy views of the neighbouring mountains. (3) That I considered the natural trees of the country, Oaks, Chestnuts, Walnuts and Magnolias, the most suitable, because this is their natural *habitat*, and disappointment does not result from their dying or becoming unsightly. The Magnolias also, from their beautiful flowers, especially the red flowering ones, would tend to render the station attractive to travellers and invalids. (4) That as a rule it is injudicious to plant trees introduced from higher levels in the hills or from elsewhere, because they do not grow so well as the trees native to the soil, and have to be renewed after a few years, increasing expense, as most of the conifers planted of late years in the station illustrated this, and Cypresses of different kinds, *Funebris* and *Torulosa*, are good examples, as they are generally dying and will require to be shortly replaced. The *Cryptomeria Japonica* is the only conifer which flourishes well, but has this objection that its dense lower branches afford shelter to squatters by the roadsides. This has led to some of them at the Chowrasta having been so cut about, that they are now unsightly objects, and will always remain so. (5) That as trees die they should be removed, and others of suitable kinds put in their places. For instance, one of the sweet Chestnuts above Ashley Dale is dead, but has not been removed. (6) That a few trees planted throughout the bazar would much improve its appearance, which is at present bare and unattractive. Proprietors of holdings there would no doubt give land for the purpose. (7) That the natural wood on the east side of Observatory Hill should be carefully preserved as the only illustration of the shrubs and smaller trees natural to the country within easy observation by visitors, and that its destruction by Nepalese and others, which is rapidly going on, should at once be put a stop to. It has been arranged in communication with the Forest Department to give effect to the above suggestions.

In connection with this subject I should mention that I caused the Officers of the Vaccination Department to report invariably where trees for shade on the roads in Bengal, generally, were wanting, or where those already planted are decaying or have died, and required removal or protection. A large number of reports on the subject were received, and were forwarded to the Road Cess Committees concerned for action.

Sanitation of Villages.

278. The following suggestion submitted by Mr. Nolan, the Magistrate of Shahabad, referring to the sanitation of villages belonging to Government, is worthy of consideration. He says:—"I think that the attention of Government might be drawn to the propriety of taking special sanitary action in its own villages, and of assigning a percentage on the rents for the purpose."

Steeping of Jute in Road-side drains.

279. The question of steeping jute in road-side drains came under my consideration during the year, and I addressed the Magistrates in whose districts the practice was supposed to be carried on, recommending the adoption of the penal bye-law framed by the district Road Cess Committee of Mymensing under Section 180 of the Road Cess Act IX (B.C.) of 1880, *vide* notification *Calcutta Gazette* of 20th July 1884. The replies indicated that in several districts this practice prevailed to so limited an extent as would not justify the adoption of the bye-law; that if the ryots are prevented using the drains for this purpose, they would in all probability use other sources of water-supply, the purity of

which was of greater importance than that of road-side drains, considering that preparing fibre from the jute plant for the market is an important trade. But the further ventilation of the subject was completely set at rest by the opinion of the Superintendent and Remembrancer of Legal Affairs, received through the Chairman of the Bogra Road Cess Committee, showing that it was outside of the competence of a District Road Committee to frame a bye-law of this nature under Section 180 of the Act.

Intra-mural and Intra-village Interments, and throwing of Corpses into Rivers.

280. I referred to these matters, but very partially, in my Annual Report for 1884. During the year under review I thought it my duty to institute a general enquiry, extending all over Bengal, as to where these very reprehensible practices, which pollute the soil and water-supply in proximity to them, obtain, and the following abstract of the reports received call for the consideration of Government. I had purposed to delineate the subject on maps, so that the extent of the practices may be seen at one view, but I could not obtain maps of suitable size, and defining the district boundaries in a special manner suited to the illustration of the subject. It will be seen from these notes that the only places in which the objectionable practice of burying the dead within or in proximity to villages is not in vogue are Chumparun and Singbhum, and some thannas in the Midnapore, Gya, Sarun, Monghyr, Bhagulpore, Sonthal Pergunnahs, Hazaribagh, Lohardugga and Manbhum districts. The Darjiling report does not state the practice which obtains in it in this respect. With regard to throwing dead bodies into rivers and other sources of water-supply, it appears that the practice does not obtain, or exists only in very limited or exceptional instances, in Serampore, Howrah, Rajshahye, Pubna, Julpaiguri, Dacca, Backergunge, Tipperah, Chittagong, Noakhali, Durbhanga, Sonthal Pergunnahs, Cuttack, Puri, Hazaribagh, Singbhum and Lohardugga, and is partially prevalent in Bankura, Midnapore, 24-Pergunnahs, Jessore, excepting in only the Narail thanna, Dinajpur, Bogra, Darjiling, Gya, Shahabad, excepting the Dumraon and Dhungaon thannas, Balasore, excepting in thannas Dhamnaghur, Balasore and Chandbali, and Manbhum. It is also seen that generally the poor chiefly, who cannot afford the cost of cremation, cast their dead into water. But this short abstract of the statements sent in will indicate how extensive both the abovementioned practices are: indeed, they constitute one of the greatest sanitary evils of the Province.

Intra-mural and Intra-village Interments.

281. *Burdwan, Bankura.*—The Mahomedans and the Boisnabs bury their dead in places set apart for the purpose within their villages, and sometimes within the enclosures of their houses, in all the thannas of these districts. Some rich families have a plot of land near their abode, in which all the dead of the family are buried. The infants of all Hindus are buried at appointed places. *Birbhum.*—In this district the Mahomedans in some instances bury their dead within their villages, and the Byragees, as a rule, bury their dead either within the enclosures of their houses or within their villages. *Midnapore.*—The Mahomedans and others bury their dead within their villages in all the thannas, except Debra, Nundigram, Panskurah, Narayangur and Muslundpur, and burials within the enclosures of houses are common in all the thannas, except Salbuni, Keshpur, Jhargram, Gopibullubpur and Sabong. *Hughli.*—In every part of this district the Mahomedans, who are well-to-do, bury their dead within the enclosures of their houses, but the poorer classes bury in the outskirts of their villages. *Howrah.*—In all the thannas in this district the Mahomedans and Jogees bury their dead, some within their villages and some near their houses. *24-Pergunnahs.*—The Mahomedans bury their dead in their villages, and in some cases within the precincts of their houses. Among some classes of the Hindus also the same procedure is observed. Jogees and Byragees bury their dead relatives, if aged, sometimes within the four walls of their dwellings, but as a rule such interments are made somewhere within the village limits. *Nuddea.*—The Mahomedans generally in all the thannas bury their dead within the enclosures of their houses or its vicinity, except those who have separate places allotted for the purpose, which are however very rare. *Jessore, Dinajpur.*—In all the thannas of these districts the Mahomedans and others

bury their dead either within their villages or within the enclosures of their houses. The same is the case in *Murshidabad*, but where regular burying grounds are resorted to, they may or may not be within the precincts of the villages. The road-side is a favourite place. *Khulna.*—In all the thannas of this district the Mahomedans and others bury their dead in their homesteads if sufficient place is available, otherwise in selected places in their own land within the village. Some rich families have a plot of land near their houses, in which all the dead of the family are buried. Infants of all Hindus are buried on the banks of the river. *Rajshahye.*—In all the thannas of this district, excepting the Municipalities, the Mahomedans and the Byragees bury their dead, the former within the enclosures of their houses generally, and sometimes out of them, but within the village, and the latter by the side of any river or canal that may exist in or near their villages. *Rungpur, Bogra, Pubna.*—Throughout every thanna in these districts the Mahomedans and Byragees bury their dead within their villages, and often within the enclosures of their houses. *Julpaiguri.*—The dead bodies of Mahomedans and others are, in all thannas generally, buried within their villages, and sometimes within the enclosures of their houses. The latter is specially the practice in the town of Julpaiguri, and is a common custom with the Boistob caste of Hindus, who do not cremate their dead. *Dacca.*—In all the thannas most of the Mahomedans, Jogees and Byragees bury their dead within their villages, and also within the enclosures of their houses. *Faridpur, Backergunge, Mymensing, Chittagong.*—The same practice is observed in all the thannas in these districts as far as all the Mahomedans are concerned, but in Faridpur the Boisnabs, as a rule, throw their dead into water, their religion forbidding cremation. *Tipperah.*—The majority of the Mahomedans throughout the district bury their dead within their villages, or within the enclosures of their houses. Villagers residing near the rivers generally bury their dead on their banks; but in a very few of the villages a plot of land is also set apart for the purpose. *Patna.*—The Mahomedans throughout this district bury their dead in selected and fixed places within their villages, and in very few instances in their own compounds. The Byragees and Kobirdasees of the Behar subdivision bury their dead close to the temples near their residences. The Jogees in the Patna or Sudder subdivision bury their dead within their own compounds. *Gya.*—In the Gya town the Mahomedans inter their dead in the burial grounds, but also close to mosques, both of which are in the town. In Sherghati the bodies are buried in and out of the villages. In Nowada and Rajowli, and in the village of Hulasganj, the bodies of Fakirs only are buried within the enclosures of their houses. In villages Rufigunge and Kutumba, some of the dead are buried in villages, and some in gardens adjoining houses. *Shahabad, Mozufferpur, Durbhanga.*—In all the thannas of these districts the Mahomedans bury their dead within their villages or within the enclosures of their houses, but in *Durbhanga* the immediate outskirts of the village are also used for the same purpose. In *Sarun.*—Only in the Sewan, Chupra, and Porsa police stations the Mahomedans and others bury their dead within their villages or within the enclosures of their houses. *Chumparun.*—Bodies are nowhere buried in this district within the enclosures of houses, neither does it appear that they are interred within the inhabited portion of the villages, except perhaps in exceptional cases. The burial grounds are generally situated sometimes at long and sometimes at short distances from the houses of the people. *Monghyr.*—In the Jamui, Monghyr, Beguserai, Kharrakpur and Surajgurrah police-stations, the Mahomedans and others bury their dead within their villages or within the enclosures of their houses. In the other thannas burials take place generally outside the villages, rarely within it. *Bhagulpore.*—In the Bhagulpore and Colgong thannas, and in some other places in the Sudder subdivision, the dead are buried within the villages; but in the other three subdivisions of the district this practice is not in force. *Purneah.*—In each village in all the thannas in this district a plot of ground is set apart in the outskirts for the burial of the dead; but wealthy Mahomedans, as a rule, have a portion of their premises set apart for this purpose. *Maldah.*—Throughout the district, most of the Mahomedans bury their dead within their villages, and a small number of them within the enclosures of their houses. *Sonthal Pergunnahs.*—In the Rajmehal station and in the outposts of Sahebganj and

Bahawa, Mahomedans are said to bury their dead within their villages, but in places set apart for the purpose. The Gossains of the Deoghur subdivision inter their dead within the enclosures of their houses. *Cuttack, Puri.*—Throughout these districts the Mahomedans bury their dead either in cemeteries or within the enclosures of their houses. *Balasore.*—In the whole of this district the Mahomedans bury their dead within the villages, and in some instances close to houses; the latter remark applies specially to the Baliapal, Basudebpur, Dhamnagar and Chandbali police-stations. *Hazaribagh.*—In Kharakdiha thanna the Mahomedans bury their dead in the outskirts of the villages and in some instances within the villages. In some villages in the Hunterganj police-station the Hindu mendicants are buried within the villages. *Lohardugga.*—In this district the Mahomedans bury their dead within the villages in all places, excepting in the Ranchi, Lodhma, Choreya, Turpa, Korambi, Tamar, Basia, Biru and Baresand police-stations. *Singbhum.*—In all the thannas in this district the Mahomedans and others bury their dead in grounds set apart for that purpose outside the limits of their villages. *Manbhum.*—In the Raghunathpur, Purulia, Para, Baghmandi and Jaipur police-stations the Mahomedans and others bury their dead within the villages or in the enclosures of their houses. The subdivisional officer of Gobindpur reports that the cholera and small-pox dead—whether of Hindus or Mahomedans—and all lepers, are either buried in the bed of an out-of-the-way streamlet or thrown into the jungle, but never cremated.

Throwing Corpses into Rivers, &c.

282. *Burdwan.*—Only low class Hindus who have no means of burning their dead frequently throw corpses into water in an uncremated or partially cremated state. This practice obtains everywhere in the district. When epidemic disease prevails, dead bodies are sometimes thrown in the jungle. *Bankura.*—It is only in thannas Bankura and Indas that some throw the dead into water uncremated or partially cremated. *Birbhum.*—Throughout the district corpses are cast into water partially cremated and in some instances uncremated by the lower class of Hindus. *Midnapore.*—In the Sudder station and Keshpur and Dashpur thannas, some of the poor classes of people throw their corpses into water uncremated or partially cremated. *Hughli.*—The poorer class of people throw their dead into the Ganges either uncremated or partially cremated as far as circumstances permit. The first class Municipalities of this district are exceptions to this rule. In none of the thannas in the Serampore subdivision are corpses cast into rivers, but the Hindus, according to their custom, throw small portions of the cremated corpses, about half a seer in weight, into water. *Howrah.*—No corpses of any village in this district are thrown into water. They are either burnt or buried. 24-*Pergunnahs.*—The poorer classes, those who are actually unable to afford the cost of cremation, throw the remains of their friends and relatives into the river, either partially cremated or uncremated; but these cases are of rare occurrence. *Nuddea.*—The Hindu poor are generally found to cast their dead into water either uncremated or partially cremated for want of necessary funds. *Jessore.*—The same practice is observed throughout this district by the poorer classes of Hindus, excepting in the Narail thanna. *Murshidabad.*—The poorer classes in this district can only partially cremate their dead, which they then throw into the nearest convenient piece of water. *Khulna.*—Throughout the district the lower orders touch the mouth of the dead with fire and then cast them into the river. Some low caste Hindus throw their infant dead into the river. *Dinajpur.*—In only the Patnitolah, Baliadangi, Kotwali, Bungshidhari and Hemtabad thannas in this district corpses are cast into water uncremated or partially cremated. *Rajshahye.*—It is only under extraordinary circumstances, such as death from snake-bite, that the dead are thrown into the water uncremated. *Rungpur.*—The poorer Hindus partially cremate their dead and then throw the bodies into the river. *Bogra.*—Excepting in the Bogra, Sherpur, Nawabganj, and Adamdighi thannas, the poorer classes, who are unable to procure wood, throw their dead into the water either uncremated or partially cremated. In *Pubna* isolated cases occur of the Hindu dead being cast into the river when difficulty is felt in procuring firewood. Dead bodies of suicides and of snake-bitten persons are generally thrown into rivers. *Darjiling.*—Some of the poorer classes in the Darjiling, Kurseong and Silliguri thannas, who cannot afford to burn the dead, do sometimes throw the corpses into the water uncremated

or partially cremated. *Julpaiguri.*—There is a general order directing the police to guard against the throwing of partially cremated bodies into rivers. Instances of breaches of this prohibition, however, occasionally occur, specially in times of epidemics. The Magistrate says it is not possible to specify the names of any thannas in which the practice alluded to is more specially prevalent. *Dacca.*—Very few Hindus of this district throw their dead into water partially cremated. *Faridpur.*—In all the thanas of this district the lower classes of the people and the poor throw their dead into rivers uncremated, the latter owing to inability to meet the necessary expenses for burning and sometimes to save the trouble of burning. *Backerganj.*—Here only the pauper dead are partially cremated and thrown into water. Unclaimed bodies and those of some Byragees are thrown into water uncremated. *Mymensing.*—In all thannas a certain percentage of the Hindu dead are thrown into water partially cremated. This practice also obtains in the cases of all the pauper dead and of persons dying intestate. Hajangs, Garos, Balois and Mandais, hill and jungle tribes, mostly found in thannas Fulpur, Durgapur, Jamalpur, Dewanganj and Sherepur, throw their dead uncremated into water. *Tipperah.*—Nowhere in this district is the practice of casting corpses into water, uncremated or partially cremated, prevalent. In cases of death occurring in boats, the corpses are said to be thrown into water uncremated. *Chittagong, Noakholi.*—In no place in these districts are corpses cast into water uncremated or partially cremated. *Patna.*—The poorer Hindus, who cannot afford to pay the cost of cremation, throw their dead into the river partially cremated, and sometimes with weights attached to sink the bodies. *Gya.*—In the jurisdictions of the Gurna, Nawada, Gobindpur, Warsabganj, Baruï, Daudnagar and Goh police-stations corpses are cast into water, uncremated or partially cremated, by those of the people who cannot afford to pay for wood. *Shahabad.*—Here the Hindus cast their corpses into water either uncremated or partially cremated, excepting in the Dumraon and Dhangain thannas. *Mozufferpore.*—In all thannas the poorer Hindus throw their dead into water, partially cremated or uncremated, after putting fire in the mouth. *Durbhunga.*—It is only when cholera rages in this district that corpses are cast into the water uncremated or partially cremated. *Sarun.*—In all the thannas in this district corpses are cast into water uncremated or partially cremated. *Chumparun.*—Only partially cremated bodies are thrown into rivers, to a more or less extent, all over the district. Very frequently the burning consists of a little fire being placed on the mouth of the corpse. *Monghyr.*—The poorer classes almost invariably dispose of the corpse partially cremated, generally only touched by fire. *Bhagulpore.*—Throughout the district the poorer classes throw the corpses into water partially cremated. *Purneah.*—The poorer classes of the Hindus cannot afford to fully cremate their dead, so they abandon it either uncremated or partially cremated. *Maldah.*—In all the thannas in this district corpses of Hindus are generally cast into the water uncremated or partially cremated. *Sonthal Pergunnahs.*—Hindus in straitened circumstances, who are unable to procure fuel, do sometimes throw their corpses into the water uncremated or partially cremated. *Cuttack.*—Nowhere in this district do Hindus throw dead bodies into the river. The Sub-Deputy Collector in charge of Killa Banki, formerly a Tributary State, annexed by Government in 1840, complained that the people of Khandpara, a bordering Tributary State, were throwing many corpses into the Mahanadi river just above Banki. *Puri.*—In no thannas of this district are corpses cast into water uncremated or partially cremated. *Balasore.*—There is not one thanna in the district in which the bodies of the dead are not cast into the water, either uncremated or partially cremated; but the statement of the Assistant District Superintendent of Police is that in thannas Balasore, Dhamnagar and Chandbali, corpses are either burnt or buried, but never cast away. *Hazaribagh, Singbhum.*—There is no thanna in these districts in which corpses are cast into water uncremated or partially cremated. *Lohardugga.*—In a few exceptional cases where people cannot collect wood for burning, they cast the dead partially cremated into water, or bury them. Among the Moondas the custom is to burn the dead close to their dwelling-houses. *Manbhum.*—In thannas Raghunathpur, Purulia and Baghmundi corpses are cast into water uncremated or partially cremated.

283. From the report of the Inspector of Emigrants, Calcutta, which has been submitted to Government, it appeared that the arrangements connected with the accommodation of the Cooly emigrants were good; that the number of rejections amounting to 47, indicated that there was some laxity in accepting recruits; that the mortality was not excessive, but that there were 14 cases of small-pox in a batch of coolies recruited in Burdwan, a district supposed to be vaccinated; that the Inspector exercised vigilance over the proper protection of the emigrants from small-pox by vaccination; and that all other matters were efficiently supervised by him during the year.

Sanitary condition of Emigration Depôts.

The report of the Medical Inspector of Emigrants, Goalundo, which was also submitted to Government, showed that the provisions of the Inland Emigration Act regarding the supply of food and clothing to the emigrants had been attended to; that the accommodation, buildings, latrine, water-supply and ablution arrangements had received attention and were kept in an efficient condition; that there was a diminution in the number of the emigrants, from causes which were explained, with a marked increase in the number of infants and children; that there was a serious outbreak of cholera during February and March which attacked 84 persons and caused 63 deaths, children and infants being mostly affected in curious contrast to the incidence of the disease in the preceding year, when not one of 777 children was attacked; that the classes of whom these coolies were made up (mostly jungly tribes from Chota Nagpur) are peculiarly liable, and are affected in much higher proportion than people from the endemic area, who appear to have, by constant exposure to the causes of cholera, acquired a certain immunity. As the time of passing through Bengal of emigrants is also one of high prevalence of the disease, so that such outbreaks are often to be feared until communications are accelerated, it is hoped that after the opening of the new Railway from Monihari on the Ganges opposite Sahebgunge no coolies for Assam will be permitted to go to Goalundo, but will be sent through Northern Bengal from the Ganges to Dhubri at once, so that coolies only for Sylhet and Cachar would come to Goalundo, and thus the danger be considerably diminished. With every extension of Railways towards the Tea districts saving of life will be effected.

284. An important work, viz., the History of Cholera in India from 1862 to 1881 prepared by Deputy Surgeon-General H. W. Bellew, Sanitary Commissioner, Punjab, was received in the office, and I was asked whether a further portion of the history, which relates to Cholera in Bengal, which was still in manuscript, should be printed or not, as the Government of India did not think it desirable to sanction the publication of the extra volumes of the history, and left it to the discretion of the several Local Governments concerned as to whether the part of the manuscript which deals with its jurisdiction should be printed or not. I replied that I considered it desirable to obtain copies of that portion of the history which relates to Bengal.

Works on Sanitation submitted by Public Officers.

At the request of Dr. Ghose, I submitted to Government the introductory chapter of a treatise which he was writing entitled "The Public Health in India," the object of which is the application of sanitary science to the special conditions of this country, for the prevention of Indian diseases, based on actual experience gained in Indian districts, with the recommendation that Dr. Ghose be privileged to present 200 copies of this treatise for the use of Municipalities. The Lieutenant-Governor preferred to have the entire work before deciding whether it could be patronized by Government.

285. In April 1884 an asylum in connection with the "Mission to Lepers in India," a private society, was started at Lohardugga under the superintendence of the Reverend F. Holn of the Lutheran Mission, the Honorary Secretaries and Treasurer of the Mission being Miss Pim and Mr. G. E. Eves, Dublin, and Mr. W. C. Baily, Edinburgh, and the Reverend J. W. Buddum, Almora. It is by no means a proselyting institution, although Christianity is brought to the notice of the patients. Its principal object is to provide a comfortable home and living and medical treatment to destitute lepers, and thereby to mitigate their sufferings and, if possible, cure them. Ten lepers had been admitted, to each of whom a separate room was given, those of them who were married being

Leper Asylum in Lohardugga.

permitted to have their families with them. Patients are admitted without distinction as to caste or creed, and, although the asylum is intended primarily for the lepers of Lohardugga, lepers of other districts will not be refused assistance. Each leper is granted a monthly allowance, varying, according to requirements, from Rs. 2 to Rs. 5 per head, and a person has been appointed to look after them on a salary of Rs. 6 per mensem. This man holds a small school, in which the children of the lepers are taught the rudiments of knowledge. It is intended, should funds be forthcoming, to provide separate accommodation for the children, to prevent them being infected by the disease. The Superintendent visits the institution twice a day, and sees that all the arrangements are properly carried out. The patients are treated on recognised principles with chalmoogra and gurjan oil, and the Native Doctor of the Charitable Dispensary visits them thrice a week, for which he is paid Rs. 5 a month, and if his services are required in cases of emergency, he is allowed one rupee per visit. The Deputy Commissioner visited the asylum while on tour and found it working in a satisfactory manner, everything kept clean, and the patients comparatively happy and comfortable.

Sanitation promoted by District Officers and others.

286. Mr. Anderson, the Magistrate of *Bankura*, who was in charge of the district for a part of the year, continued his work of having tanks reserved for the separate purposes of drinking, bathing, washing; isolated tanks during outbreaks of cholera; and caused excreta and vomit of cholera cases to be buried. The Sub-divisional officer of Rampurhat in *Birbhum* reports that believing long before Dr. Koch came to India that the germ of Cholera (as well as of many other diseases) existed in water, he was always rigidly strict in seeing that his orders relating to the conservation of water were carried out. He not only reserved tanks at the head-quarters, but also applied section 270 of the Penal Code to all cases in the interior of the Sub-division in which the banks of public tanks were fouled. He was also very energetic in adopting preventive means for arresting the progress of Cholera, by causing sulphur to be burnt in affected houses; by preventing the resort to tanks that had been used by those attacked; and by throwing in large quantities of lime into tanks in the villages where the disease was present. By these means he says he confined the progress of the disease to Pakuria, a village about a mile from the north-east limits of Rampurhat, to which village the disease had gradually come down, attacking village after village, from the north and north-east; and thus Rampurhat, which had for years previously suffered from the disease, escaped it again. In *Manbhum* Babu Rash Behari Lal Singh contributed very liberally to the completion of the Govindpur lake, and Rs. 1,000 were given for the same purpose from the funds of the late Maharáni of Pandra. The Zemindar of Jheria has also put up a very substantial and commodious shed for the local market.

SECTION X.

PERSONAL PROCEEDINGS.

PROCEEDINGS OF THE SANITARY COMMISSIONER.

Officer in charge of the Office during the year.

287. I was in charge of the Office throughout the year.

288. The 27 Municipalities named in the margin were inspected by me during the year. More would have been done had the greater part of last cold season not been taken up with the Sanitary Commission on the state of Calcutta. I also inspected, on the 17th July, at the request of the Suburban Municipality, the Moti Jheel and Kantal Bagan bustees in company with Dr. Jackson, the Civil Surgeon of the 24-Pergunnahs, and forwarded a joint report indicating the defects observed in them and the recommendations for their reclamation and improvement. Improvements had been effected, to a more or less extent, in all the towns inspected, in comparison with their condition when last visited, excepting in Chupra, where a retrogression appeared to have taken place, and in Soory, Gya and Old Maldah, where hardly any progress had been made. The sanitary condition of Burdwan, Darjiling, Monghyr, Kurseong, Berhampore, City Murshidabad, Hughli and Chinsurah, Howrah, Durbhunga and Purneah may be said to be fairly satisfactory. Not so that of the rest of the towns, chiefly Bettiah, Jamalpore, Motihari, Naraingunge, Arrah, Dacca, Serampore, Gya, Patna and Suburbs of Calcutta, the worst of all, and including Chupra, Old Maldah and Gya, already alluded to. Fuller details regarding the towns inspected will be found in Appendix IV to this Report. I may mention here, although the subject will be alluded to in fuller detail further on, that a large number of the minor towns were visited and thoroughly inspected by some of the Officers of the Vaccination Department, most largely by Dr. Ghose, the Officiating Deputy Sanitary Commissioner of the Metropolitan Circles.

Places visited and inspected during the year with results.

In January.	*In February—concld.*
Old Maldah.	Motihari.
Sahebgunge.	Bettiah.
Bhagulpore.	*In March.*
City Murshidabad.	Suburbs of Calcutta.
Purneah.	*In May.*
Berhampore.	Darjiling.
English Bazar.	*In August.*
Soori.	Kurseong.
In February.	Dacca.
Burdwan.	Naraingunge.
Patna.	*In November.*
Arrah.	Hughli.
Gya.	Serampore.
Monghur.	*In December.*
Jamalpore.	Howrah.
Durbhunga.	
Mozufferpore.	
Chupra.	

Lectures on Hygiene delivered at the Medical College.

289. In the capacity of Professor of Hygiene in the Medical College, I delivered 20 lectures on the subject to 33 students.

Reports on Sanitary questions submitted to Government.

290. I was appointed on the 3rd September a member of a Commission formed by the Lieutenant-Governor to enquire into and report on the adequacy or otherwise of the provisions made by the Calcutta Municipal Corporation for the cleansing and conservancy of the town, &c.—*vide* paragraph 274 of this Report. This duty occupied a great portion of my time between October 1884 and January 1885.

At the request of Government I visited the country in the Sub-division of Baraset, in the 24-Pergunnahs, drained by the Nowyee and Soontee nullahs; and investigated into the health of the locality and the causes of its alleged deterioration, &c. A full report on the subject has been submitted to Government, and the main particulars have been embodied in paragraph 122 of this Report.

PROCEEDINGS OF THE HEALTH OFFICER OF THE PORT OF CALCUTTA.

Inspection of Vessels.

291. The Health Officer of the Port of Calcutta inspected all the inward and outward bound vessels, the former amounting to 715 with 30,992 European and native seamen on board, against 815 with 29,611 seamen in

the preceding year, and the latter to 482 vessels with 15,579 seamen, against 649 with 18,378 seamen in 1883, as per details marginally furnished. It will be observed that there was a large diminution in the number of vessels inspected, excepting inward bound steamers, which show an increase of 21; but the decrease has followed a falling off of shipping entering the Port. The Health Officer performed all his duties with commendable zeal, energy and care.

	Inward bound. 1884.	Inward bound. 1883.	Outward bound. 1884.	Outward bound. 1883.
VESSELS.				
Foreign ...	642	779	474	647
Country ...	73	36	8	2
Steamers ..	321	300	114	132
Sailing vessels ...	394	515	368	517
SEAMEN.				
Europeans ...	17,750	21,005	11,350	15,746
Natives ...	13,242	8,606	4,229	2,632
Total ...	30,992	29,611	15,579	18,378

PROCEEDINGS OF THE NATIVE SANITARY INSPECTOR OF THE PORT OF CALCUTTA.

Nature of duties performed.

292. A primary duty of the native Sanitary Inspector of the Port was to watch the health of the crews of all native craft in the Port, and it is satisfactory to find that this duty was zealously performed, for while in 1883 there were 212 admissions into hospital, this year the number has increased to 301. He is also charged with the inspection of the foreshore of the river, of latrines on its banks, and of drains and water-courses entering it, and with the duty of reporting to the Health Officer the existence of nuisances. He also assists the Health Officer in disinfecting vessels. During this year he inspected 12,622 boats and 371 latrines, and found 286 of the former and 18 of the latter in a filthy condition; made 289 complaints to the police; traced 341 cases of sickness on board of boats; and inspected 114 Police water-boats.

PROCEEDINGS OF THE OFFICERS OF THE VACCINATION DEPARTMENT IN CONNECTION WITH THEIR SANITARY DUTIES.

Number of Villages visited.

293. The subjoined table exhibits, collectively, the number of villages visited by the Deputy Sanitary Commissioners and the Deputy Superintendents of Vaccination, in connection with their sanitary duties, compared with the returns of the preceding year. The village sanitary inspections of Inspectors, Native Superintendents, and others holding similar rank, are not included in this table, as comparatively only a small number of them have performed this work, and they are so illiterate that what they have written on the subject in the vernacular of their districts is not worth translating; and I propose to discontinue asking for such sanitary reports, except with regard to a few particulars, as the time occupied in compilation is time almost wasted and affords excuse for neglect of duty, and the translation throws heavy work on the Office clerks of Circles, and delays the general Office work to its detriment. Their chief attention was directed to verifying the registration of births and deaths, and the account as to the manner in which they performed this duty will be found in a subsequent portion of this Section of the Report

CIRCLES.	By the Deputy Sanitary Commissioners. Number of Officers. 1884-85.	1883-84.	Number of Villages inspected. 1884-85.	1883-84.	By the Deputy Superintendents of Vaccination. Number of Officers. 1884-85.	1883-84.	Number of Villages inspected. 1884-85.	1883-84.
Metropolitan ...	1	1	613	358	5	4	2,051	914
Darjiling ...	1	1	93	69	2	2	164	114
Ranchi ...	1	1	479	565	1	1	25	100
Sonthal Pergunnahs ...	1	......	32	...	......	1	..	93
Eastern Bengal ...	1	1	133	177	1	1	334	46
Orissa ...	1	1	863	794	There are no Deputy Superintendents in these Circles.			
Behar ...	1	1	399	390				
Total ...	7	6	2,712	2,353	9	9	2,574	1,267

This table indicates that, on the whole, the sanitary condition of 5,286 villages was examined by the Officers of the Vaccination Department against 3,620 during the preceding year. Of this number, the Deputy Sanitary Commissioners inspected 2,712 against 2,353, and the Deputy Superintendents of Vaccination 2,574 against 1,267. Considering the Inspections in each Circle separately, some Circles show improvement while others show retrogression

On the side of improvement we have the Deputy Sanitary Commissioners of the Metropolitan, Darjiling, Orissa and Behar Circles, and the Deputy Superintendents of Vaccination of the Metropolitan, Eastern Bengal and Darjiling Circles. The additional number of villages inspected by these Officers are marginally noted in the order of numerical value. On the side of retrogression we have the Deputy Sanitary Commissioners of the Ranchi and Eastern Bengal Circles, and the Deputy Superintendent of Vaccination of the Ranchi Circle. The extent of retrogression is also marginally indicated. Conspicuous for good work in this direction is Dr. Ghose, the Officiating Deputy Sanitary Commissioner of the Metropolitan Circles. The Deputy Sanitary Commissioner of the Orissa Circle, Mr. P. Veeriah Naidu, has a good return, and Dr. Owen of Ranchi, though showing a less number than last year, did a good season's Inspection. The large increase shown by the Deputy Superintendent of Vaccination, Eastern Bengal Circle, Assistant Surgeon Doorga Das Roy, arises from a full season's duty being exhibited for this year against part of one in 1883-84. The Deputy Sanitary Commissioner of the Darjiling Circle and the Superintendent of Vaccination, Sonthal Pergunnahs Circle, have done little Sanitary Inspection.

Improvement.				Retrogression.			
Deputy Sanitary Commissioners of—		Deputy Superintendents of vaccination.		Deputy Sanitary Commissioners.		Deputy Superintendents of vaccination.	
Circles.	Number of villages.	Circles.	Number of villages.	Circles.	Number of villages.	Circles.	Number of villages.
Metropolitan.	255	Metropolitan	1,307	Ranchi ...	86	Ranchi ...	75
Orissa ...	169	Eastern Bengal	288	Eastern Bengal	41		
Darjeeling ...	24	Darjeeling ...	50				
Behar ...	9						

294. The Subordinate Officers of the department, that is, the Inspectors, Native Superintendents, and others holding similar rank, inspected 25,769 villages, and with very few exceptions regularly verified mortuary statistics at the thanas, after ascertaining them at the villages. Extracts from their verification statements, a very large number of which was received during the year, indicating non-entries of deaths which occurred in the villages, in the registers kept up at the thanas, were, in every instance, sent to the Magistrates of the districts concerned, and this procedure was attended with the good results mentioned in paragraph 5 of this Report. I have, however, in this connection, to note that some Deputy Sanitary Commissioners and several of the Deputy Superintendents of Vaccination omitted to perform this duty, or performed it perfunctorily. A notable instance was the Deputy Superintendent of Vaccination, 2nd Metropolitan Circle, who had to be warned that if similar neglect recurred he would be reported to Government for removal from his post.

Work of the Subordinate Officers of the department.

295. All the Deputy Sanitary Commissioners, with the exception of Mr. Lyons of the Eastern Bengal Circle, and all the Deputy Superintendents of Vaccination, submitted their Diaries of vaccination and Sanitary Inspections month by month. Mr. Lyons' omission in this respect has been already animadverted on in paragraph 235 of this Report. These diaries were closely checked by me, and whenever insufficient, improper, or perfunctory work—Vaccination, Sanitary, or Registration—on the part of the Officers, from the Deputy Sanitary Commissioners down to the Head Vaccinators—was detected, due notice was taken of it, and the recusant Officer was warned or reprimanded. The chief irregularities committed by the Officers generally, as disclosed in their Diaries, were,—making Inspections in places convenient to themselves, or not far from their homes, or in places easy of access by rail or boat, whereby Inspections in the interior of the districts were omitted; incomplete Inspections; reports on Sanitation or Vaccination not made in accordance with prescribed rules; omission or delay to attend to outbreaks of Small-pox, or not reporting their occurrence; leaving large numbers unprotected in the area visited; using bad Lymph; testing Registration incompletely, or omitting to do so wholly; and by the superior Officers, insufficient supervision and omission to make observations on the work of their subordinates. Some Deputy Superintendents reported at full length on the sanitary condition of small villages with nothing special calling for remarks, thus expending much time and labour for no useful end. This was checked.

Submission of Diaries. Irregularities noticed.

296. I should mention here that whenever reports were made in the Diaries relating to the insanitary condition of any place, or to other cognate matters calling for attention, copies of such reports were forwarded to the local authorities concerned for the necessary action.

Action taken on Reports made in the Diaries.

297. A *resumé* of the observations bearing on the Sanitary condition of the Villages inspected, submitted by the Deputy Sanitary Commissioners and Deputy Superintendents of Vaccination, is subjoined. It should be mentioned that these observations are very condensed summaries of the Sanitary work performed during the working season, consisting of six months.

Reports on the Health condition of the Villages, &c., inspected, and recommendations made for rectifying their Sanitary defects.

298. METROPOLITAN CIRCLES.—*Dr. Kristo Dhone Ghose, Officiating Deputy Sanitary Commissioner.*—This Officer's observations relate to 613 villages inspected by him in thanas Bariepore, Tollygunge, Joynuggur, Baraset, Bussirhat, Habra, Baduria, Hosseinabad and Nowabgunge in the 24-Pergunnahs; thanas Kalarooa, Satkhira, Kaligunge and Assasooni in Khulna; thanas Tumluk Panchkura, Debra, Midnapore, Keshpore, Daspore and Ghatal in Midnapore; thanas Bongong and Gouripotha in Jessore; thanas Dumjoor, Jagatbullubpore and Ampta in Howrah; thanas Goghat and Jehanabad in Hughli; thanas Santipore, Ranaghat and Chogda in Nuddea, and in the Suburbs of Calcutta which he inspected frequently. *Village Sanitation.*—Dr. Ghose says that words cannot describe the insanitary condition of the villages in this Circle. The dwelling-houses are crowded together, precluding facilities for conservancy or ventilation. Site or soil are not attended to. Sweepings and refuse are heaped up in courtyards, or behind the huts, or thrown into a ditch. Frequently cowdung and cow-house litter are seen on the banks or on the slopes of tanks. These insanitary conditions prevail mostly among Mahomedans, and the poultry they rear aggravate the evil by scattering the rubbish in search of insects. Low jungle abounds all round the huts, along roadsides and paths, in the courtyards of houses, and even on the walls of the pucca houses. *Drainage.*—This is commonly defective and causes widespread malaria. Even where there is a good outfall, the village sites are not drained into them. Roads and paths in high bustees often serve as drains, while in low lands high narrow ridges are thrown up for communication, and deep trenches are consequently formed on both sides, where rain-water accumulates, stagnates, and is used for steeping jute in. Surface drains, where excavated, lead into drinking water tanks; and the drainage passes from tank to tank until the spill-water flows into a paddy-field or a bheel. Dr. Ghose noticed that in many malarious villages the outfall is invariably defective, and consists of either a silted up bed of a stream, or an undrained bheel; while in some instances, specially towards the southern portion of the 24-Pergunnahs, in the villages bordering khals which efficiently drain away much of the bheel water, leaving enough for paddy cultivation, very little malarious fever is seen, as the rain washes away all surface impurities from the villages into the paddy-fields or bheels, the impurities deposited over the fields serving as manure, and comparatively pure water flows from the khals. The immunity from malaria is specially noticeable if the khals are sluiced to prevent flood-water from entering the bheels and lowlying places in the villages. In illustration of these observations Dr. Ghose writes:—"This feature in some of the villages in the Midnapore district struck me. On my way from Kola to Gopigunge I went through a long line of villages lying on the right bank of the Roopnarain river. These villages are protected from floods by means of a very high embankment, and drained by means of sluices. The result is that such lowlying places, which in other parts of Bengal and near Ghattal in the same district would be pestilential marshes, are here smiling fields of corn. The village sites are dry, every inch of ground is under cultivation, and there is no weed or jungle to be seen anywhere. Even shallow tanks show no sign of aquatic weed in them. The people have not the appearance of malarious cachexia in them, and the children look fat and well nourished. During my tour I have also noticed that in a recently formed deltaic plain the water does not stagnate, and a sort of drainage goes on. From rivers rise *khals*, which during the rains flood all lowlying depressed basins in the country, and from these again other *khals* begin and flow, either into the same river at a lower level, or into another having a lower flood-level. Except during very high

floods, the surface drainage of the country passes either into the *khals* or into the low basins, and from there freely flows away. There is no stagnation, but a continual flushing, by means of fresh water, carries all impurities before it to the sea. But unfortunately the water in these rivers brings with it sand and silt which are deposited irregularly. Thus in time the lowland rises, *khals* are obstructed, and neither the rain-water nor the flood-water can flow. The rush of water being impeded, roads and bridges are easily made, and are made with insufficient waterways. Stagnation of moisture in the ground occurs, and malarious fevers are the consequence. At this stage artificial drainage becomes necessary. For illustration of what I have said, I will describe the condition of a tract of country which is very important and which immediately adjoins Calcutta. It extends from a line drawn from North Barrakpore to a little beyond the town of Baraset, down to another drawn across the Dum-Dum parade ground and produced east and west. It thus forms almost a triangle, having the river Hughli for its base. It was at one time inhabited by a flourishing population, and within it are situated the Infantry station of Barrakpore and the Artillery station of Dum-Dum. Since the last 30 years or so this tract of country has become very malarious. In December last I visited almost every village within this area and explored its drainage system. Forty years ago the Barrakpore, Khurdah and Kamarhatti khals, rising from the Hughli, used to bring in water and spread out into a basin of low ground lying between the high left bank of the Hughli on the west and the high villages on the right bank of the Nowyee on the east. From this basin other khals again used to carry the water into the Nowyee, which had a lower flood level than the Hughli, but a considerable portion of the drainage used to flow over the sloping country in the south and discharge itself into the Salt Water Lake. The discharging khals and the Nowyee have now silted up, and, by a series of embanked roads and railways, the free flow of water into the Salt Water Lake has been impeded. The whole area has thus been converted into blocks of marshes, the culverts and bridges acting only when the country is overflowed. In addition to the re-excavation of the Nowyee and the Soontee *nuddees* to drain the eastern portion of this part of the country, an efficient drainage channel ought to be excavated leading all the drainage from the low basins, above alluded to, to the Salt Water Lake, which in its turn ought to be reclaimed by means of embankments and sluices." *Water-supply.*—On this important sanitary question Dr. Ghose's observations are valuable. He says that no village can be said to have a supply of pure drinking water. Those situated on the banks of rivers are better off in this respect than those which depend on tanks and bheels for water, but even here it is not safe, as it is contaminated in various ways. The tanks in the inland villages all receive surface drainage, and water washing down all organic impurities and surface fœcal matter can, after a little stagnation and evaporation, be nothing more or less than sewage. The leading of surface drainage into tanks is believed to tend to their speedy silting up, and the surface detritus of years carried by the drainage into the tanks is causing the old ones to dry up. Thus the water, in addition to being bad in quality, is fast becoming insufficient in quantity. Doctor Ghose is inclined to think that the obstructed drainage of the country has something to do with the speedy deterioration of tanks, as "the soil of a deltaic country must have much organic matter in it, and as soon as the sub-soil moisture becomes stagnant, rapid decomposition of organic matter sets in. The water in the tanks being continuous with the sub-soil sheet of water must share with it in the decomposition process of the organic matter in suspension, and a prolific growth of organic germs is the result." *Food-Supply.*—Dr. Ghose's remarks on the distress caused by diminished food-supply from failure of harvest are very pertinent. After stating that he has not seen that this distress has been the cause of disease and death anywhere, he writes:—"I was struck with the indirect starvation through which a certain class of the village population are going. The price of food is rising year after year, and is telling on some of the high caste people, who have either a stationary or declining income. There are those who depend on rich relations and neighbours. These latter have either become less charitable, or their notions of charity have changed, or they have removed to Calcutta. There is the village priest and village writer whose incomes have considerably fallen. The weavers in the Ghattal and Jehanabad Sub-divisions and the artizans in Bankura, competing with the Manchester fabric, are suffering from poverty, the insanitary results of which are

slow but sure. Of course such a state of things is inevitable in a transition state of society, but it must be taken note of in accounting for disease and death in the country." *Conservancy* is conspicuous by its entire absence, and with regard to the *Disposal of the Dead*, the practice common all over Bengal of burying in shallow grounds in and near house compounds obtains in this Circle also. *Recommendations.*—On this point Dr. Ghose writes:—"From my observations, I am of opinion that want of drainage and bad water-supply are the general and crying evils in all these districts. The former has made malarial fevers and the latter cholera the endemic diseases of the country. The remedial measures in both are questions involving heavy expenditure of money, and if left to poor Municipalities and Local Boards will never be undertaken. With regard to the unhealthy dwellings and insanitary habits of the people, advancing knowledge and material progress can be pointed out as the prime remedies. The Sanitary Instructor must be abroad. Even in civilized Europe habits of cleanliness and observance of sanitary laws is of very recent date. The recent agitation in Calcutta has somewhat awakened the educated portions of the community to a sense of the importance of sanitary reforms. During my tour I found people too eager to know what would keep them in health. For this awakening to be lasting sanitary education must be extended. It is too much to expect that village *gurus* shall explain the Bengali translation of Dr. Cunningham's Sanitary Primer. The work of such teaching must begin in high schools and filtrate downwards, as all knowledge does. It is for the University to begin the work. Hygiene is not yet a separate subject of examination for the degree of Bachelor of Medicine, and the vernacular Schools of Medicine do not teach even the elementary principles of preventive medicine. The Native Doctors and Civil Hospital Assistants educated in these schools, are ignorant of the practice of vaccination. This I fear is also true of the Licentiates and Bachelors of Medicine, and yet the Compulsory Vaccination Act (Act V of 1880) accepts the certificates of "Medical Practitioners" in schedules A, B, and C. The evil effects of passing a spurious sore as successful vaccination are not fully appreciated. I therefore think that a short course of hygiene should be introduced in the Campbell Medical School, and all medical students should be compelled to practise vaccination in some of the vaccine stations in the City or in the Suburbs." *Municipalities.*—Dr. Ghose inspected the 20 Municipalities named in the margin. His reports on them show that he inspected them with great and commendable care and attention. Copies of these reports were forwarded to the Chairmen of the Municipalities in question for the necessary action, but his summary of results referring to the Suburban Municipality may be advantageously quoted here:—

Suburbs of Calcutta.		Bussirhat	Municipality.
South Suburban	Municipality.	Tanki	"
Barnagore	"	Bariepore	"
Balli	"	Joynuggur	"
Ranaghat	"	Baraset	"
Santipore	"	Tumluk*	"
Chanduria	"	Ghattal	"
Beernuggur	"	Khirpai	"
Goburdanga	"	Chundrakona	"
Baduria	"	Ramjibunpore	"

"I paid several visits to this Municipality, and am surprised to find that such a slough of dirt and filth should be allowed to encircle the Metropolis of British India. The Municipality has no means of exercising sanitary supervision. The conservancy and surface cleansing are done by contract, and the Overseers and Nuisance Inspectors are without a departmental head who has time at his disposal. Thus the establishment is ornamental, and the work is done in a perfunctory manner. The contract system should be given up, and the whole work of conservancy and cleansing should be placed under an executive Health Officer and under a good Officer. The contractor's profits would more than cover the pay of the Health Officer. To detail the evil effects of the present system would be too long for the space of this report, but I mention one or two facts to show that the sanitary administration of this Municipality is a farce. Under bustee improvement, the owner of a *bustee* is served with a notice on the opinion of two medical men, and is required to open a number of roads for purposes of conservancy The roads are opened, but no conservancy cart goes over them, because the contractor by his contract is bound to clean only the roads that existed at the time of his contract. Again, as a rule, a public latrine is built at municipal expense in a bustee on the zemindar's land. The zemindar takes possession of it, leases it

out to the night-soil contractor, who charges a fee to all inhabitants of the *bustee*. On the strength of this latrine, the Municipality disallows any private privy in the bustee and yet charges a house service fee. The poor day-labourer has thus to pay double dues, sometimes to the extent of eight and ten annas a month for himself and his family; and yet he has not a clean place to resort to. There is no drainage in the Suburbs of Calcutta. The so-called drains are deep ditches without proper levels, and sewage of all kinds passes into them. Undrained land abounds, which becomes positively swampy during the rains, or if situated near a bustee becomes a receptacle of sewage. Thus not only the rain-water percolates into the spongy sub-soil, but takes with it a large amount of organic impurities. As a result, malarious fevers, very often attended with typhoid symptoms, are prevalent. Pulmonary, consumption, dysentery and cholera are common. The water-supply is almost exclusively from tanks. No tanks in a sewage-saturated soil can be a reservoir of pure and safe water. Very often surface drainage is carried purposely into tanks for filling them. Add to this the fact that no care is taken to prevent contamination by human agency, and some conception of the quality of the water used by the people will be formed. Privies are often found all round on the immediate bank or slopes of tanks, although section 230 of the Bengal Municipal Act prohibits it. Section 225 is seldom observed. Section 232 is not observed. Many privies open on to public roads, infringing section 231 of the same Act. The Mahomedan burial grounds of Calcutta are situated in the Suburbs, too close to its thickly inhabited parts, and the burial itself is not under proper supervision. Loose shallow graves are crowded together at Manicktollah, in a badly drained piece of land, within a few feet of tanks and alongside of one of the finest thoroughfares of the city."

299. SUBURBS OF CALCUTTA.—*Assistant Surgeons Preumber Nath Mitter and Jogendro Nath Bhuttacharjee, Deputy Superintendents of Vaccination.*—The last-named Officer took over charge of this Deputy Superintendentship on the 9th February 1885, and could not consequently make any extended inspection in his charge. There is not any material point in his report which has not been dealt with by Dr. Ghose and his predecessor, Assistant Surgeon Preumber Nath Mitter. So to avoid recapitulation I omit mention of his observations here. The last-named Officer has done excellent work in the Suburbs. He inspected 132 bustees in the 14 thanas into which the Suburban Municipality is divided. His report indicates that he bestowed much attention on his charge. It is, however, too lengthy to be done full justice to in this Report; but the following record of the main facts connected with the insanitary conditions prevalent in the Suburban Municipality generally, and in certain portions of it particularly, will no doubt be useful. *Conservancy.*—There is a want of adequate and proper arrangements for the removal of sewage and refuse and surface impurities. Promiscuous defœcation was observed in some places in the drains. The latrines are filthy. *Drainage* is obstructed in many places. The ditches are in bad condition and filthy, containing decomposed vegetation and animal matter. There are many pits and hollows, containing foul, stagnant water, covered with moss or weeds, and the land is water-logged. *Cattle sheds.*—Accumulations of cowdung and urine and cow-house litter are common. This was particularly the case in Haldar Bagan, where they were found lying to the uniform width of about two yards all along the main road, and in Jogeepara and Buniapara, in thana Baliaghatta, where large quantities of dung and urine were seen in excavations and on lowlying land within and about habitations. *Water-supply.*—The tanks are polluted in every possible manner, and covered with weeds or aquatic plants, with jungle and ordure on their banks. *Ventilation* is defective generally, and free perflation of air impeded in various ways. The following are some of the most important defects which were noted in particular localities in the Suburbs. *Thana Baliaghatta.*—The site of this thana is lower than the level of the high water spring tide of the river Hugbli. It is therefore water-logged and swampy. The tanks in and about the bustees of Shaheb Bagan and Narcoldanga were pronounced by the German Doctors, deputed to investigate into the cause of Cholera in India, to contain bacilli which occasioned the cholera outbreaks in these bustees. The conservancy arrangements are bad in the extreme, and this is said to be due to the removal of night-soil and refuse being conducted by the contract system.

The practice of burning shells for lime is reported to be one of the causes of the insalubrity of the Chingrihatta Bustee. One source of unhealthiness in Butcherpara is the keeping for days together in heaps the offal of cattle slaughtered before removal to Dhappa. *Thana Manicktolla.*—The water-supply of this thana is obtained from impure sources. *Thana Kashipur.*—The malarious fever prevailing in this thana is attributed to its abounding in bad jheels, morasses and swamps. *Thana Bhowanipore.*—The main roads of this thana are comparatively clean, but as the interior of the bustees is reached many very objectionable and nasty localities are to be seen where filth abounds. This is particularly the case in Potopore, Boloram Bose's bagan, Poribazar, Gossye bustee, Gungaram bustee, Kassey bagan bustee, Badrapara and Jelliapara, where scavenging is not properly attended to; the houses are surrounded with filth, animal and human excreta not excepted; the private privies not regularly cleaned, and the public ones, although clean in appearance, stink, indicating similar neglect. The maidan and water-courses on the north of Mr. Lington's tank at Kassey bagan are freely resorted to for defœcation. The blocks of huts at *Kalighat* are surrounded with filth, and the kundu, a sacred tank to the west of the temple of Kali, was filthy and stinking. Almost all the tanks in this thana are filthy in the extreme. *Thana Garden Reach.*—The settlement of the King of Oudh and his dependents has, it is said, made Mateabrooj in this thana, once a good locality, an unhealthy bustee. *Thana Entally.*—The unhealthiness of this thana is stated to be due to the contamination of the tanks. *Thana Ekbalpore.*—A proper system of drainage is a crying want in this thana. *Thana Baniapukur.*—The disagreeable odour caused by the tanning of hides, which is largely carried on in Dugdugipara, Chamarpara and Tantibagan in this thana, is said to be a constant source of impurity to the air, likely to prove injurious to health. *Thana Tollygunge.*—Fever prevails to a greater extent in this than in any other thana in the Suburbs, due to its being damp, imperfectly drained, jungly, and to a certain extent marshy. Good tanks are nowhere to be found in it, all being contaminated and impregnated with rank vegetation. The *suggestions* for the rectification of the defects observed, submitted by the Deputy Superintendent of Vaccination, are—(1) To compel the owners to have their foul tanks reclaimed or replenished, or at least to clear out the impurities which have made the water in them unwholesome; and to fill up useless and offensive ponds. (2) To cause the Municipal Conservancy Department to attend to the cleanliness of the bustees and to conservancy generally, and to see that the municipal laws are strictly observed by the people. (3) To make the Police report defœcation in the streets, drains, and in waste places and unoccupied land. (4) To reclaim the gowalla bustees, and to compel the gowallas to keep their premises scrupulously clean. (5) To remove the tanneries to the outskirts of the bustees. (6) To attend to the drainage of the bustees, keeping them in effective working order. (7) To cause the owners of land to remove all jungle and rank vegetation. (8) The roads to be watered, and their surface cleansing to be attended to. (9) Arrangements to be made for the daily removal of night-soil from all public and private latrines.

300. 1st Metropolitan Circle.—*Assistant Surgeon Neem Chand Gupta, Deputy Superintendent of Vaccination.*—This Officer's observations refer to 300 villages in the 24-Pergunnahs, Jessore and Khulna districts. He says most of the villages are in a primitive state, abound in jungle and hollows containing stagnant water, the receptacles of vegetable refuse and sweepings. These hollows are great nuisances, emitting a foul stench. There is no regular drainage anywhere. The rain-water passes over the kutcha roads and footpaths into a bheel, paddy-field, or waste land. The villagers in Kajeepur, in thana Kotowalli in Jessore, complained that owing to the Railroad being higher up, and the calibre of the drain pipe under the Railway road not being sufficiently large, the rain-water accumulates in the village and rises up to the floor of the cattle sheds. Conservancy arrangements are absent generally, and defœcation takes place on roadsides, fields, or jungles, on the banks of tanks, ponds, rivers, bheels, or any watercourse. House sweepings and refuse are thrown anywhere, or accumulated near the dwellings, where, during the rainy season, they rot and contaminate the atmosphere. The water-supply is

obtained from rivers. tanks, bawoors (báor, or bed of the river deserted by the stream, but full of water), bheels or wells. No tanks are reserved exclusively for drinking purposes, but all are used promiscuously for all purposes. Some of them are choked with weeds, &c., and rubbish of all descriptions are seen on their banks. Moreover, the people, particularly the females, urinate in them prior to carrying away the water for use. In some places there is great difficulty in procuring water during the hot months, for want of tanks or wells and the bheels and rivers being distant. In the eastern districts fish is caught by the process called "koerkathi," which consists of dipping several large branches of trees with the leaves on, in the rivers with the view of catching the fish easily and in great number. These branches are kept under water for months continuously, the consequence being that they rot and pollute the water, rendering it unfit to drink, and yet the people use it. In some places jute is steeped in ponds within the villages. This is objectionable, but being a branch of industry cannot be interfered with. This officer also verified the deaths which occurred in the villages. The *recommendations* submitted by him are—(1) That the portion of the river Bhyrub which runs through Jessore be cleared of the weeds, &c., which choke it. (2) That public latrines be erected in places where travellers assemble in large numbers, such as Bunnogram, Bussirhat, Baduria, &c. (3) That the koerkathi process of catching fish be prohibited in all bawoors and rivers in which the water is stagnant, and is used for drinking or other domestic purposes. (4) That wells be sunk in all villages where there are no tanks and ponds, and where the bheels dry up in summer. (5) That defæcation on the banks of rivers and urinating in ponds and tanks be prohibited as far as possible. (6) That burial grounds be provided for the Mahomedans at a little distance from the village, or that a piece of land be allotted to ten or more villages for this purpose. (7) That a spot be fixed at a convenient distance from several villages whereon to throw carcasses of animals.

301. 2ND METROPOLITAN CIRCLE.—*Assistant Surgeon Kassi Chunder Dutt, Deputy Superintendent of Vaccination.*—This officer visited 842 villages in the districts of Nuddea, Murshidabad, and Birbhum. He observes that none of the villages in the two first-named districts visited by him were in good sanitary condition. They abound in jungle, large trees, and bamboo groves—in some villages to such an extent as to prevent perflation of air and obstruct light. The surface drainage is imperfect, and the water-supply, which is taken from wells, bheels, dead rivers, bad and scarce in the winter when these sources dry up, even some of the riverside villages suffer, as the rivers have silted up in several places and their mouths closed up. While suffering from deficient water in winter, the lowlying villages are subjected to much distress during the rains from overflooding. The general health in Nuddea and Murshidabad was good; but several cases of enlarged spleen and liver, the sequelæ of old malarial fever, were observed. In Birbhum the villages are comparatively in better sanitary condition. Most of these are situated on high ground, have good tanks which supply sufficient water, and are free from jungle.

302. 3RD METROPOLITAN CIRCLE.—*Assistant Surgeon Jadub Chunder Ghose, Rai Bahadoor, Deputy Superintendent of Vaccination.*—The sanitary inspections of this Officer were very satisfactory, and his report has been drawn up with care. It refers to 909 villages in 34 thanas in the districts of Burdwan, Howrah, and half of the 24-Pergunnahs districts. He says that the villages generally appeared flourishing, the houses comparatively neater, cleaner, drier, and better ventilated, the people in good health, and food, though not abundant, within the reach of all. In Burdwan alone the want was great, but up to the close of the season he did not come across a case of death by starvation. The well-to-do gladly assisted with necessaries those who suffered distress, zemindars offered to receive any reasonable rent their tenants were able to pay and to lend money on the most favourable terms, and ample work was provided to enable them to earn their livelihood. It was only the indolent, the aged, and those who were sick who suffered most. The people generally are very apathetic and slow to appreciate sanitary improvements, and will not carry out for themselves the most elementary sanitary measures, all persuasions and explanations being unheeded, the pleas

proffered being poverty, or that they do not think that any change is necessary, as their forefathers did not fare the worse from the existing state of things. The educated, however, and those who had resided temporarily in localities which have advanced in sanitation, were found to have effected great improvements, such as provision of effective drainage, clearance of jungle, proper conservation of water, erecting dry and better ventilated dwellings, and keeping them neat and clean. The important sanitary defects observed were want of drainage, absence of proper and good roads for communication, want of good drinking water, abundance of noxious vegetation, accumulations of filth and rubbish close to houses, tanks or footpaths, and promiscuous defœcation. To remedy these defects nothing short of compulsory rules are, this Officer says, indicated. Registration of deaths was also very carefully verified by him. On the whole, the general health is reported to have been good, excepting that fever prevailed very severely and fatally in thanas Ausgram and Sahebgunj in Burdwan, cholera in thanas Shampore and Juggutbullubpore in Howrah and Bistopore and Tolliganj in the 24-Pergunnahs, and small-pox in several thanas. The Deputy Superintendent afforded medical assistance and offered advice on the preventive measures which were necessary. They were adopted, it is said, with favourable results.

303. 4TH METROPOLITAN CIRCLE.—*Assistant Surgeons Mohendro Lall Bose and Preumber Nath Mitter, Deputy Superintendents of Vaccination.*—This Circle was in charge of the Officers above named, the former up to 17th February 1885 and the latter from the 18th of that month. *Assistant Surgeon Mohendro Lall Bose* visited only 36 villages in thanas Daspur, Mushlundpur or Mysadul, Tumluk, Panskurah and Nandigram in the Midnapore district, and in thanas Bishenpur, Kotulpur and Indas in Bankura, and his report on them is most unsatisfactory, clearly indicating that he bestowed very little attention in preparing it. He states that the sanitary condition of these villages was not good, tanks in unsatisfactory condition filled with panna and surrounded by bamboo and other trees, rendering the water impure and filthy; no proper roads and drains, the village pathways acting as drains; rubbish, refuse, cowdung, &c., found in heaps in many places almost close to houses; that cremation is carried on close to the villages and the rags, &c., belonging to the dead scattered about the burning places; that the houses are generally unventilated, and that nothing was done during the year to improve the sanitary condition of the villages. Registration of deaths was verified by this officer. On the whole, the general health of the Circle was reported to be exceptionally good, but the people in Bankura and Midnapore were found to have enlarged spleen and liver of long standing, the sequelæ of malarious fever, from which they had suffered in previous years. The *suggestions* offered by the Deputy Superintendent are that the old tanks should be reclaimed and trees not allowed to be planted on the banks of tanks, and that rubbish and refuse should not be allowed to be heaped up close to houses.

304. *Assistant Surgeon Preumber Nath Mitter* displayed the same activity in this Circle as in the Suburban Municipality. He inspected 192 villages in thanas Narainghur, Contai, Egra, Bhogobanpore, Sutahatta, Mushlundpore, Tumluk, Panchkurah, Midnapore, Debra, Daspore and Ghattal in Midnapore. He has submitted the following observations with regard to each of these thanas. *Thana Naraingh ur.*—Portions of this thana were stated to be malarious and the abode of cholera last year. There are swampy tracts in it, but little jungle. There are no regular roads or a proper system of drainage. Water-supply is obtained from the river Haldi, the Naraingh ur khal and tanks. The water in the river becomes brackish in the hot season. No tanks are reserved for drinking purposes, and all of them are polluted from decomposed vegetation. There are no wells. There is no conservancy. People defœcate in the fields, around dwelling-houses and along pathways. *Thana Contai.*—The chief sources of soil pollution in this thana are surface defilement, chiefly by human and animal excreta; cremation and interment of the dead within house enclosures or backyards, plantation land and gardens; and improper disposal of household garbage and refuse and other organic matters, and of carcasses. During the rains the courtyards of houses are flooded and their basements are injured, and paddy fields and low grounds become sheets of water. This lasts from July to February, and it is this that renders Contai

more unhealthy than the other thanas in the district. The tanks are offensive and impure everywhere, particularly in thickly populated villages, from organic impurities. The houses in some parts are in blocks. The drainage is defective. All the drains are open ditches with defective levels and insufficient outfall, tortuous and obstructed in several places. They are, moreover, generally used as latrines. The *Contai* town is on a lower level than the surrounding parts of the thana. *Thana Egra.*—The habits of the people in this thana are filthy, and rotton fish is their daily food. There are no thoroughfares, and during the rains this want is much felt. The water-supply is in the same objectionable condition as in Contai. The dwellings are defective in ventilation. They are, however, not damp and contain sufficient accommodation for the inmates. There is no conservancy, and sweepings, garbage and refuse are accumulated, and are a source of contamination to the soil and tanks during the rains. The insanitary conditions noted above are common, *mutatis mutandis*, to the rest of the thanas in the Midnapore district inspected by the Deputy Superintendent, but the following points claim attention:—In thana *Sutahalta* education is altogether neglected and morality is unknown, the people consisting mostly of the Podh, Chandal and Kyburto classes; no Kayustas, and only a few Brahmins, and those of the Watkul sect. The men, being idle, dislike cultivation, to carry on which they hire labourers from the Contai and Sabong thanas. They take pride in this; consequently the women do all the manual labour. The staple articles of food are rice and khesari dâl, and these are the only crops grown in this thana. Rice of fine quality are at times cultivated for sale only. Even the well-to-do live poorly. *Thana Mushlundpore.*—In this thana the Badoor Canal has silted up. There are marshy tracts of cornfields at villages Kariacharpur, Bushdebpur, Ekteerpur, Londra, Bogdu, Porbutipur, Tototikea and Tajpur, and when the rainfall is great the tracts remain flooded with water up to the end of March. The current opinion regarding this is that there had formerly been a canal from the Haldi river at Ilanogri to the Roopnarain river at the village Bankis, which was closed owing to the opening of the new canal from Gunwakhali to Etamograh. The embankment of these two khals, which enclose the above-mentioned villages, does not allow their being drained, and has thus caused a very large tract of marshy cornfields, in which the crops rot under stagnant water. This is one cause of the unhealthiness of this thana. The enclosed tract of land obtains an inflow of water by the Gunwakhali Canal, but there are no means for it to flow out. The Ganges Steam Navigation Company do not allow this water to pass out through their canal, and hence the evil. *Thana Tumluk.*—More trees require to be planted along the road from Tumluk to Panchkurah, as the existing ones are far apart. *Thana Daspur.*—Dead bodies are thrown on the sides of the embankments during the rainy season in some of the villages in this thana, and cremation takes place in the midst of its villages.

305. DARJILING CIRCLE.—*Dr. J. J. Wood, Deputy Sanitary Commissioner.*—This officer's report indicates the Sanitary Inspection work done by himself and his two Deputies, Moulvie Tujumul Hossein and Assistant Surgeon Narendra Nath Gupta. Dr. Wood inspected only 93 villages in thanas Kurseong, Punkabari, Darjiling, Sikarpore and Silligoree in the district of Darjiling; Thakurgaon, Rajarampore, Kaliaganj, Hemtabad, Peerganj and Beerganj in Dinagepore; Nattore, Putia, Beauleah, Charghat and Lalpore in Rajshahye; Bogra, Sherpore and Sahibganj in Bogra; Gobindganj, Pirganj, Mitapuker, Nisbutganj, Kowrganj and Darwani in Rungpore; Julpaiguri, Bhujimpore and Keranti in Julpaiguri; Kishenganj in Purneah; and Kharba in Maldah. Except that he inspected between 4 and 7 villages in thanas Gobindganj (4), Charghat (5), Kaliganj (5), Thakoorgaon (5), Bogra (6), and Rajarampore (7), his inspections were limited to 1 to 3 villages in the rest of the thanas.

306. *Moulvie Tujumul Hossein* inspected 50 villages in Gundwara, Sudder, Kissenganj (3 each), Kusba, Amour, Ramganj and Bahadoorganj (1 each) in the district of Purneah; Rajarampur (4), Chintamon, Parbutipur, Patiram, Mahadebpur, 2 each, Beerganj, Patnitollah (1 each) and Banshibaree (3) in Dinagepur; Silliguri outpost and Nuxulbari (1 each) in Darjiling; and Sikurpur (4), Mynaguri (3), Julpaiguri and Patgram (1 each) in Julpaiguri.

307. *Assistant Surgeon Norendra Nath Gupta* inspected 114 villages in thanas Nattore (21), Panchpore (9), Nougaon (7), Singrah (8), Putia (1), Barigram (9), Charghat (8), Gadagari (9), Lalpore (6), Bagmarah (2), and Beauleah (2) in the Rajshahye district; Kowrganj (3), Mahiganj (2), Kaliaganj (4), Dimla (1), and Darwani (1) in Rungpore; and Bogra (11), Sherpur (3), Adamdighi (1), Khettal (2), and Panchbibi (4) in Bogra.

It is apparent from the small number of villages inspected by these Officers that this branch of their duty has been very much neglected.

Dr. Wood's report is, moreover, a very poor one, and consists in great part of a commentary on the work of his subordinates. He says :—"That the names of all the places visited would fill a book," by which he evidently means the 4,037 localities visited for inspection of *vaccinations* by himself, the two Deputy Superintendents, and the 12 subordinate Inspecting Officers, the last whom performed the bulk of the work, represented by 3,780 places visited. The report shows that all the villages inspected were in an insanitary condition in every respect. The dwellings are fairly water-tight, and the overhanging eaves keep the walls dry; but they are overcrowded with inmates, surrounded with trees and jungle, which interfere with free perflation of air, and sewage and refuse lie about in heaps or in hollows. The roads, bye-paths, &c., are frequently used as latrines. There are no side drains to the roads. The water-supply is commonly bad, polluted by all conceivable means, and nowhere above suspicion. Conservancy is conspicuous by its absence. Burials frequently take place on the banks of tanks, usually close to houses, and the graves are not dug sufficiently deep. The people recognize and understand the insanitary conditions around them, but will not spend the money required to correct the defects. Registration of deaths was verified. The general health was not bad on the whole. The causes of unhealthiness are said to be malarial poison; poor food; bad water; exposure, when insufficiently clothed, to extremes of temperature; chills; and "the consequent sudden throwing of extra work upon the internal blood-glands; perhaps too early marriage."

308. RANCHI CIRCLE.—*Dr. W. Owen, Officiating Deputy Sanitary Commissioner.*—This officer inspected 479 villages, and submits a report on 132 of them, situated in 17 thanas in Lohardugga, in six thanas in Hazaribagh, and in the Sirgooja Native State. His report is creditable and carefully prepared. He says the people generally, high and low, were found to be ignorant or indifferent to sanitation or its effects. The villages inspected can only be described as filthy and disgusting. In lowlying villages pools of liquid filth, covered with a green scum, emitting horrid odour, were found immediately adjoining the houses. Holes dug in the ground in the centre of the village and filled with cowdung, &c., close to and in front of the houses, are common. These collections are said to be made for the purpose of being spread over the fields in August as manure, but as they putrify and evolve poisonous gases under the action of a strong sun and moisture, and the liquid portion filters into the ground, the evil can be easily imagined. Moreover, in the west and south of Lohardugga and in Hazaribagh, where large numbers of cattle are kept, the urine from the cow-sheds saturates the ground and gives rise to offensive odour. The condition of the villages situated on rising ground (knolls) is better, as the rain carries off with it much of the impurities noticed above. The houses in Hazaribagh are also generally better sanitated. The principal source of water-supply is what is called a dari. This is made by banking up the end of a rice field, and the term is also applied to a hole, varying in depth one to four or five feet, sunk in a rice field. Sometimes, but rarely, this excavation is surrounded by planks or sticks, or has a breastwork of stones. All water from such a source, being merely the surface drainage, is very muddy and impure, and quite unfit for drinking purposes. Water is also taken from tanks and wells. The former are few and far between, and, though there are some good ones, the majority are shallow, and their water is also muddy and impure. Wells are also rare, and with the exception of a few near the Police barracks, which contain good water, are throughout kutcha with indifferent water. Water is occasionally taken from small streams and the rivers. This water is generally of a somewhat better quality, but contains a considerable quantity of suspended matters. In Palamow and Hazaribagh, where daris are rarely met with, the principal supply is taken from wells. There is a large number of fine tanks in Hazaribagh, but they are also used for

bathing and washing clothes. The houses are deficient in ventilation and crowded together, and the majority of them are on a level with the ground, or very little raised, leading to dampness. In the great majority of cases there is no drainage in any of the villages. There is nothing objectionable with regard to the disposal of the dead. The Araons, if they can afford it, burn their dead; and if the body is partially cremated, the remains are buried, and those who can afford the expense exhume the buried portions and cremate them a second time. Generally the people resort to the fields for purposes of nature, and this practice was not found to be a nuisance anywhere, except in Hazaribagh; but here, in a few cases, bye-lanes are also used as latrines. In some cases the higher castes have sundasses or well-privies, and mehtranis are kept by some to keep these clean. The general health of the Hazaribagh and Lohardugga districts was good, except in thana Hunterganj in the former district and Toree pergunnah in the latter, where the people looked poor and ill-nourished, due, it is said, to diminished food-supply from failure of crops for some seasons past, caused by deficient rainfall. The registration of deaths in 91 villages were verified, and in 26 cases discrepancies were traced. *Recommendations.*—Dr. Owen says that, were he to make recommendations for improvements on the European standard of sanitation, volumes would have to be written, and the expense of carrying them out would be immense; but he considers the rectification of the following defects to be necessary—(1) Good pucca or kutcha wells would be a vast improvement on the daris, but in sinking them he thinks it would be advisable to consult an Engineer or Sanitary Officer as regards their position, as it is too often found that they have been constructed close to dwellings, in the centre of a town, or near other sources of impurity. The water being thus defiled, becomes a source of danger to those who use it. (2) To provide a second tank in villages where only one exists, so that one of the tanks may be reserved for drinking and the other used for bathing and washing. (3) Where jungle is being cut down and new villages being founded, proper sites should be chosen for them. (4) To keep cattle outside the villages, at a proper distance, in enclosures, to mitigate the nuisance regarding them above related.

309. *Assistant Surgeon Prosonno Coomar Dey, Deputy Superintendent of Vaccination.*—This officer's Sanitary Inspections extended over only 25 villages in thanas Purulia, Barabhum, Manbazar, Rughunathpore, Gourangdi, Govindpore, Jheria and Nirsha in the Manbhum district and in thanas Ghatsilla, Seraikella and Khursowan in Singbhum. It is noticed that, excepting 10 villages in Purulia his head-quarters, his inspections were limited to one or two villages in each of the rest of the thanas. His report is very meagre, and most of his observations correspond with those of Dr. Owen, so, excepting the following, they need not be reproduced. He says—(1) That one bad practice is that flocks of buffaloes are allowed to remain in many of the tanks for hours together, so that they urinate and defœcate in the water, which thus becomes highly polluted. (2) That there is only one tank strictly protected from pollution by the Rajah of Pachete in Kashipore. (3) That the people of Koorcha in thana Purulia suffer for want of sufficient water, especially in the hot season, as there is only one tank in the locality. They were instructed to dig wells. (4) At one village bodies were burnt by the side of the best tank in it, which was used for drinking and other purposes. The people were advised to discontinue the practice. That with regard to registration of deaths he verified the deaths in 50 villages by comparison with the mortuary rolls kept at the thanas, and he found that the registers were defective in nearly all the thanas.

310. SONTHAL PERGUNNAHS CIRCLE.—*Assistant Surgeon Kali Prosonno Ghosal, Deputy Sanitary Commissioner.*—This Officer's Sanitary Inspections extended over only 32 villages in thanas Bihipur (11), Umerpur (5), Kotowalli (5), and Colgong (7) in the district of Bhagulpore; in thanas Barharwa (1), Mohespur (1), and Pulloor (1) in the Sonthal Pergunnahs; and in thana Kharagpur (1) in Monghyr. His report does not possess much sanitary value. It shows that some of the villages inspected by him occupied elevated spots and some not. They were in the majority of instances not crowded, and contained sufficient accommodation for the inmates, but their surroundings are filthy, all sweepings and refuse and cowdung are collected near the houses, and are not removed until required to be used as manure. There

are no proper roads, and the drinking water is taken from wells and tanks. Some of the former are properly protected and some not, and the latter, in most instances, are filthy, containing decaying vegetation, and covered with weeds, &c. The dead are buried outside the villages in places set apart for the purpose, but the carcasses of animals are thrown near the villages. The road-sides and excavations near the houses are resorted to for defæcation. The general health of the people was good. Registration of deaths was verified. The Superintendent advised the people to correct the above defects.

311. EASTERN BENGAL CIRCLE.—*Mr. A. Lyons, Deputy Sanitary Commissioner.*—The Sanitary Inspections of this Officer extended over 133 villages in thanas Daudkandi, Hajigunge, Chandpore and Laksham in Tipperah, and thanas Begumgunge, Ramgunge and Lakhipore in Noakhali. He reports that he had the people in each village collected, and that he addressed them on simple sanitary subjects. He was listened to simply from a sense of respect and curiosity. All agreed in the propriety and desirableness of the suggestions made, but said that no change in the existing state of matters could or would be made without Government interference and help. They appeared to be prejudiced, timid, or apathetic, and certainly too poor to carry out any sanitary reform spontaneously. Mr. Lyons believes it is useless for an officer to point out sanitary defects to the people without having the power and means to rectify them, as they treat such advice with silent and concealed contempt. "Problematically speaking, it is to them like adding nothing to nothing, and substracting nothing from it." From all he has seen and heard he is convinced that "the masses would welcome simple reforms in the direction of sanitation under regulations prescribed and carried out under the auspices of Government. However, if the matter of sanitation be left solely to the will of the people, generations must pass before any appreciable change will be effected." Mr. Lyons gives a sketch of the topography and climate peculiarities of his Circle, which it is unnecessary to reproduce. With regard to population, he says most, if not all, the inhabitants are Hindus or Mahomedans, the latter preponderating. The Hindus are split into many castes: the Mahomedans consist chiefly of Sunis and a large number of Ferazis. The females exceed the males. The habits of the people are very filthy. They bathe in water of any quality, and a duck or two constitutes the process. They defæcate anywhere, within or outside the courtyards of their houses, or in, or near, or on the banks of tanks, or on the banks of the nearest khal or nuddi. *Dwellings.*—To protect the village from damp and annual flooding, large excavations had originally to be made to provide earth to raise the mounds and plinths on which each house stands. Thus arose the many excavations of all sizes, shapes and depth, many of which go by the name of tanks. Many of these excavations are covered with rank vegetation and form the receptacles of filth of every description, each house having one of such. The interior of the houses and the courtyards are carefully swept and kept clean, the floors being leeped. The ventilation is fair. Sewage and refuse lie immediately outside the courtyards till nature and animals remove them. The condition of the cow-houses is undescribable. The dung is heaped up close by the houses, and the stench emitted by it is intolerable *Roads.*—Beyond 'hallots,' ravines, and foot-paths, nothing like a road is to be met with in any village. During the rains the hallots are impassable from water and slush. The main roads which connect sudder stations with thanas, and thanas with thanas, are few; and the majority of them unbridged. The roads are shelterless in respect to trees, a stunted palm tree, or occasionally a pipul, is met with. The roads from Ramgunge to Lakhipore, from Lakhipore to Begumguge, and from Begumgunge to Nandana in Noakhali are entirely without shade. *Water-supply.*—In the districts of Tipperah and Noakhali water is obtained from tanks and running streams. Both sources are polluted in every way; the latter in the worst manner. Tanks are nowhere protected, but are indiscriminately used for every purpose. Micturation takes place in all of them, and defæcation in some by means of overhanging boughs or roots of trees, and the contents of machan-privies find their way into the tanks with every heavy shower of rain. Besides, all manner of house refuse are thrown on their sides and gathering grounds. The water-courses are not only subject to similar nuisances, but the carcasses of animals are cast into them, and the Byragis and Jogis submerge their dead in them. *Conservancy*

is absent from every village so far as human agency is concerned, the scavenging being mostly performed by dogs and jackals. People for the most part defœcate in the village and on the sides of streams; never on the fields. Dead cattle are thrown on the outskirts of the village, if a nuddi is not close by. *Disposal of the dead.*—Cremation takes place on the banks of running streams or on any spot where water is procurable, and not unfrequently in the villages. The Mahomedans bury their dead at a depth of about 4½ feet, either within their holdings or by the sides of old tanks, but on chur land; during the rains interment takes place in the courtyard of, and sometimes, though rarely, within, the house. *Registration* of deaths was verified and many discrepancies detected. *General health.*—The people on the chur lands looked healthy and strong, but not so elsewhere, though no special disease was present among them. The children especially looked pale and flabby, the result of frequent attacks of paludal fever. Enlarged spleens are very common, particularly in Noakhali. *Recommendations.*—Under this head Mr. Lyons submits the following—(1) To fill up the numerous huge excavations, which cause great unhealthiness, as early as possible, Government contributing a part of the cost; and (2) to introduce the hath-chitti or hand-book system for the improvement of the registration of vital statistics.

312. *Assistant Surgeon Durga Das Roy, Deputy Superintendent of Vaccination.*—This officer inspected 331 villages in thanas Kusba, Chandogram, Laksham, Hajigunge, Chandpore, Daudkandi, Nobinuggur and Brahmanberia in Tipperah; in thanas Naraingunge, Sabhar, Manickgunge, Munshigunge Raipura, Rupgunge and Srinuggur in Dacca; in thanas Goalundo, Kotalipore, Bhanga, Madaripore, Shibchar and Palong in Faridpore; in thanas Tangail and Pingna in Mymensing; in thana Begumgunge in Noakhali; and in thanas Serajgunge and Mathura in Pubna. He describes the topography of his Circle generally, and with regard to villages says, "the one peculiarity to which I would beg to draw attention, and which to my mind is a prolific source of disease in the villages, is the number of trenches, hollows, holes, pits, &c., of various sizes and depths, serving as reservoirs of water for longer or shorter periods after subsidence of the floods, and favouring the growth and decay of various aquatic plants. These are to be seen in almost every village. They are not natural peculiarities; but they have arisen out of the natural low levels of the country, necessitating the digging of earth to raise the homesteads. The obstructed drainage caused by the collection in them of the surface water is obvious enough. Then there is the mischief arising from the decomposition of vegetable substances, which grow so abundantly in them. Frequently, again, house-refuse and sweepings of every kind are thrown in them, there to putrify and spread pestilence around. The steeping of jute plants, bamboos, &c., in them is also not uncommon. Lastly, there is the practice of building privies on them. If to these be added the circumstance that, foul as the water from them is, it is sometimes used for domestic purposes, not excepting drinking itself, some idea of the mischief they are likely to do can be formed." *The people.*—Simplicity is still the leading feature in village life: the luxuries are few, harmless, and easily supplied; spiritious liquors are avoided with horror, and the number who indulge in them habitually and in excess are very few. Narcotics do not also appear to be indulged in. "The habit of cleanliness is proverbial, but it exists now only in name. The whole energy would seem to be concentrated in two things, viz. bathing and keeping the houses and courtyards clean. To those, especially the former, they pay superstitious veneration. Indeed, the mania for plunging the body in tanks has run so high that they will pay no regard to anything else. Hence the difficulty—I might almost say the impossibility—of tank conservation." Manual labour is abhorred by the high and middle classes. The Brahmans, the Vaidya, and the higher class of Sudras consider touching the plough or workman's tools a defilement. Hence the eagerness to obtain Government employment. The lower classes take to cultivation as a means of subsistence, "which bids fair to make them quite independent of the higher classes." *Dwellings.*—The villages are spacious enough, but individual mohullas in certain villages are overcrowded. Perflation of air and ventilation depends much upon the size of the rectangular courtyards, which every dwelling has, and the number of houses on its sides.

Roads and drains.—The kutcha roads are few, and fewer still the pucca ones. Roads, where they exist, have scarcely any side drains. Some villages have trenches, which instead of aiding drainage seem rather to obstruct it. The roadsides and the pathways are used as latrines. *Water-supply.*—Rivers, tanks, and wells, and in some places bheels, khalls, and dobas are the sources of water-supply. The water from the rivers is generally good, but it is highly contaminated by the burning of dead bodies on their banks, or casting these into them, uncremated or partially cremated; by burying the dead on their foreshores or banks; by the using of their sides as latrines; by the reception by them through khals, &c., of water from villages, fields, swamps, bheels, &c., after subsidence of inundation; by steeping in them of bamboos, timber, flax and jute; by bathing and washing of every kind; by the presence of decaying vegetation in them; and by the nature of the soil. *Tanks.*—Some villages have a sufficient number of tanks, others only a few which dry up in the hot season. Tank water is rendered impure by the same causes as above mentioned, but the two great sources of contamination are bathing and washing and putrifaction of vegetation. *Wells* are not much used. They are of three kinds—(1) Matiakūās, which are nothing more than temporary holes sunk in the sandy soil. They are of use only after the subsidence of floods. (2) Patkūās, in which the sides are protected by rings of burnt clay, and these have parapet walls. (3) Katkūās, in which the sides are protected by wooden planks. The quality of the well-water varies according to the nature of the soil, but it is generally good. *Conservancy.*—No conservancy arrangements exist in villages. The house refuse, liquid and solid, not consumed by animals, is thrown on the house compound. The former is at once absorbed by the soil, and the latter lies to be acted on by the "natural agencies." The cowsheds are often filthy, the dung and urine being imperfectly removed, and the former heaped up in the compounds to be used as manure for the fields or converted into cakes and used as fuel, a portion being used for plastering house floors or house walls when the latter is made of reeds. The majority of the people resort for purposes of nature to the jungles, or any other available place in and out of the villages. The few privies which exist are of three kinds. The simplest are holes dug in a secluded place behind the house. When using it the members of the household sit on the ground, until in about a week or two the hole has been filled. The filth in the meantime is being gradually eaten by dogs, cows, beetles, &c., either entirely or in part: if in part, the remainder is scraped off and thrown aside, and the hole again used. The next step in advance is in cases in which pieces of bamboo or wood are used for seats over the holes. In places subject to inundation these seats are made suitably high. Then there is the kutcha privy, in which machans or bamboo platforms, supported on bamboo or wooden posts of various heights, and used for seats also over holes. Again, there is the pucca privy, which is on the same principle as the kutcha ones, only more decent in appearance. There is no means of removing the soil from village privies, as the Bhuinmalas, the hereditary mehters, have combined not to follow the profession of their forefathers. The consequence is that filth accumulates in the privies for months together, until washed off by the floods. It is said that the beetle plays an important part in removing fœcal matter. It is most active in this respect. "Its work is visible when fœcal matter lies scattered in villages in the simple family privies, in the jungles, and in the fields. In passing through villages one is sure to find little mounds of loose earth evidently occupying the place of the fœcal matter. On carefully removing the earth, holes are discovered, which lead to subterranean passages—retreats in fact for these insects to hide themselves in and store up the fœces. By tracing these holes to their termination I have on several occasions captured beetles with the fœcal matter. *Disposal of the dead.*—The observations of the Deputy Superintendent under this head are identical with those of the Superintendent, but he adds that carelessness is sometimes exhibited in not effectually covering up the graves, and this is why they occasionally sink in; and that, although the plea for intra-village burials is want of other places, the real cause appears to be want of courage to break through an old practice. *General health* of the people is said to have been on the whole good. *Advice tendered to the people.*—It appears from the

diary of this Deputy Superintendent that in village Baliati in thana Manickgunge in the Dacca district he addressed the people with a view, as stated by him, to tell them of what he saw in their village, and especially to give them a few words of advice. He writes—"I addressed a meeting of 300 men, headed of course by the rich, the educated, and the influential zemindars of the village, on the subject of 'preservation of health.' A good deal of interest was displayed in the meeting by them, not only because all the zemindars either personally graced the occasion by their presence, or did so through younger members of the families, but likewise because they have shown their appreciation of it by actually forming themselves into an association to give effect to some of the suggestions contained in the address. For the present they have taken up two subjects, viz. *first*, to open a respectable charitable dispensary under charge of an Assistant Surgeon; and *secondly*, to build some roads in the village. For the former purpose they wish to devote the proceeds of the Shaturia hat and bazar, which are the joint properties of all the zemindars." *Recommendations.*—The Deputy Superintendent says that much must be done for the improvement of village sanitation. "To say nothing of the insanitary condition of house compounds, of bathing and washing in tanks, supplying drinking water, of burning and burying the dead within the villages, and of using the sides of roads, &c., as latrines—defects which can be easily removed by the people themselves if only roused from their lethargy—there are two things which demand speedy attention. These are the filling up of trenches, holes, &c. (gors, dobas, &c.), and the deepening of the old rivers and khals, or cutting new ones. The work, if undertaken by Government, will, in addition to securing good drainage and supplying earth for filling up dobas, &c., aid agriculture by affording means of irrigation, and supply comparatively good drinking water, and facilitate locomotion."

313. Orissa Circle.—*Mr. P. Veriah Naidu, Deputy Sanitary Commissioner.*—This Officer's inspections extended over 963 villages, situated in the Cuttack town, and in thanas Cuttack, Dharamsala, Jajipore, Salipore, Kendrapara, Patamundi, Aul, Jagatsingpore and Tirtol, in the district of Cuttack; and in thanas Khoorda, sudder, and Atghur in the Puri district. His observations, summed up, furnish the following information. Some of the villages are situated on high ground and some on low, surrounded partly or wholly by wet cultivation. The houses are kept clean; the ventilation is fair, the refuse and sewage being thrown outside of the village; cattle are kept within the dwellings; the dead are buried and burnt outside of the villages; the water-supply, taken from wells and tanks, is plentiful; and the roads and footpaths are kutcha. In the villages of Ruthia, Mirzapore, Rodia, Barimool, Hurikristopore, Tirtole, Patorea and in the Patamundi thana in the Cuttack district, and Sonapadur and Mirzapore in the Puri district, however, the streets and houses were in a very filthy condition. In the villages of Rodia, Mohanpore, Harikristopore and Patma and in the Patamundi thana in the Cuttack district, and Mungapore in the Puri district, cowdung heaps were seen in front of houses. Personal cleanliness is neglected by everybody in the Jutchra village in the Tirtol thana in Cuttack. Registration of deaths was verified, no discrepancies having been detected. The general health was, on the whole, good, except in Tirtol thana in Cuttack, where an epidemic of cholera broke out in August, September and October. The Superintendent also visited the Jagatsingpore thana in Cuttack at the request of the Civil Surgeon to investigate into an outbreak of cholera there. With this duty he combined Sanitary Inspection. He brought to the notice of the Magistrate certain nuisances at the Inspection Bungalow on the Kendrapore road, likely to be detrimental to the health of the Officers who resort to it. He reported to this office that it was necessary, in order that village traffic may be facilitated, that a kutcha road between village Puranabusant and village Purampore at Jajipore, part of which had been constructed, should be completed. He noticed that the cut which had been made in the protective embankment five miles above Aul Killa at the request of the cultivators, to supply them with water during the last drought when the river was low, had widened to about 220 feet when the river suddenly rose, owing to the work not having been properly executed originally, and that thus the flood-water stood above the level of the country about four or five feet, causing complete damage to the crops. He also noticed that six breaches had occurred on the Chandballi road at the

51st and 52nd and 53rd miles during the last rainy season. These have since been repaired. He brought to the notice of the Magistrate of Puri that a gap 24×6 feet had occurred on the Khurda Nowagur road at the 10¾th mile, which rendered traffic difficult, and he suggested to that Officer that a bridge should be erected and trees planted on both sides of the road from Baghmaree to Gowdpatna-Tickapada. The first defect has been rectified by the Road Cess Department. He also furnished an account of the Puri town, chiefly dwelling on the construction, &c., of the temple of Juggernath; the rites and ceremonies observed by the priests and people in connection with the worship of the idol Juggernath; the food used and sold; the causes which induce the people to undertake the pilgrimage to Juggernath, and the sufferings they undergo in doing so; and on other cognate matters. But as these facts are well known, they have been omitted from this record.

314. BEHAR CIRCLE.—*Assistant Surgeon Mathura Nath Sen, Deputy Sanitary Commissioner.*—This Officer's Sanitary Inspections extended over 399 villages, of which 295 are situated in thanas Dumraon, Buxar, Dhangaon, Peroo, Arrah and Belowti in the Shahabad district, and 104 in thanas Bankipore, Futua, Barh and Mokamah in the Patna district. His report embraces chiefly the following particulars. The majority of the villages in these districts differ in no way from each other as regards their sanitary condition, which is most unsatisfactory. *Topography.*—The villages situated on the south of the Railway are comparatively on a lower level than those on the north of the line, and most of them are surrounded by low, closely cultivated paddy-fields. *Dwellings.*—These are crowded together, ill-ventilated, and generally overcrowded with inmates at night. The floors are of mud, but dry, except during the rainy season. The cattle sheds are close to the houses, but kept clean. The people are active, but the low caste Hindus are intemperate to the extreme. *Roads.*—The village roads consists of narrow footpaths between the rows of houses, and these pathways also serve the purposes of drains. Most of the main district roads in Shahabad are metalled, and trees have been planted on their sides and care is taken to preserve them; but the Patna roads have been partially metalled, and some of the trees planted on them have died away, evidently from want of care. *Water-supply.*—The water-supply everywhere is obtained from wells, excepting in the few villages situated along the banks of the Ganges, and here the water of that river is used. The wells are generally situated on high ground, and most of them are protected from inward drainage by masonry parapets; but bathing and washing of clothes and cooking utensils are carried on around them, thus rendering their surroundings very filthy. The well-water is nowhere above suspicion. *Conservancy.*—Conservancy arrangements are *nil* throughout. Of the private privies that exist, the most of them consist of sundasses or well-privies. The people generally defœcate wherever they find it convenient to do so. Heaps of refuse and rubbish and numerous pits and holes, containing all the year round water of the foulest description, are to be met with. Cleanliness, both domestic and personal, are neglected everywhere, and the people are very scantily clothed. *Drainage.*—The natural drainage of Shahabad and Patna is good, the surface water easily running off to the nearest streams; but in the lowlying tracts in the latter district the alungs and bunds, which separate the paddy-fields, obstruct natural drainage greatly. These bunds are generally about five or six feet high. *Disposal of the dead.*—Interments are carried on generally outside the village, close to it, but not near tanks or wells. As regards cremation, if the village is situated within seven or eight miles from the river Ganges, the corpse is carried to that river and burnt on its banks: otherwise it is cremated on the outskirts of the village, or at the nearest stream. The process at the river side, consists of partially cremating the corpse and sometimes only disfiguring the face, and then throwing the body into the river. *Food-supply.*—The great bulk of the people subsist on maize, but the poorer classes take only one meal and that at night, consisting of rice, dâl and vegetables, or chapati or hand-made bread, taking during the day a handful of suttoo or chabani (parched grain). Curd or dahi is extensively consumed, and animal food rarely and that by the Mahomedans. Generally the coarsest and the cheapest articles are used. *Registration.*—The verification of deaths was attended to in 96 villages in Patna and in 261 in Shahabad, and discrepancies were traced in 15 villages in the

former and 54 villages in the latter district. In Shahabad the chowkidars report the events orally to the registering officer, but in Patna the hath-chitti or hand-book system is in operation, and here it is said much interest is taken in the subject. It appeared to the Superintendent that infant mortality is to a great extent not reported, as it is very difficult to obtain correct information from the men who are under the impression that, if subsequently any discrepancy is traced, the chowkidar will get into trouble; but this difficulty is not experienced with the females and children, from whom correct information is readily obtainable. *General health* was on the whole good, sporadic cases of small-pox and local outbreaks of cholera and fever excepted. *Suggestions.*—The Superintendent reports that he pointed out to the people the defects in sanitation which existed, and tendered advice for their correction, explaining the necessity of doing so; but that many of them, while recognizing the necessity of reforms, exhibited no inclination to carry them out, being quite indifferent in the matter. He is of opinion that "preachings will not produce any effect on the minds of the illiterate men," and he thinks that the application of a penal law on the subject is the only means to effect good in this direction. His suggestions for the rectification of defects are—(1) To prohibit promiscuous defœcation, limiting it to the fields outside and at a distance from the villages. (2) To prohibit accumulations of refuse and rubbish within the village and to utilize them as manure. (3) To cause the pits and hollows in the villages to be filled up. (4) To prevent bathing and washing of cooking utensils around wells. (5) To reserve some wells for drinking purposes only. (6) To cause dead bodies to be cremated completely.

Measures adopted to secure better Sanitary Inspection work.

315. With the view of giving effect to the observations of Government in paragraph 21 of its Resolution of 15th August 1884 on the Annual Vaccination Report of this department for 1883-84, referring to the small amount of sanitary work performed by the Officers of the Vaccination Department during that year, I issued the subjoined instructions with the view of impressing upon these Officers the necessity of performing full work in this direction, warning them that any negligence or remissness on their part would be brought specially to the notice of Government:—

1. Deputy Sanitary Commissioners and Deputy Superintendents of Vaccination will afford to this office in future much fuller and more carefully prepared sanitary inspection reports of the Municipalities (other than such Municipalities as form Sudder Stations, which, as usual, will be inspected by the Sanitary Commissioner), Unions, and Villages within their respective jurisdictions.

2. Those Deputy Sanitary Commissioners and Deputy Superintendents of Vaccination who draw travelling allowance during the whole year are required to utilize the hot and rainy seasons, as well as the regular vaccination working season, in making careful Sanitary Inspections of the areas above indicated.

3. The Inspection Reports should be drawn up in *narrative* form, the instructions given in sections II, III, IV, and VI of the "Rules for the guidance of the Officers of the Vaccination Department with reference to their Vaccination and Sanitary Inspection duties," being abided by, and the special points requiring remedial action, and the manner in which the defects may be rectified, being pointed out.

4. The Deputy Sanitary Commissioners and the Deputy Superintendents of Vaccination will submit their Inspection Reports to this office. These reports will be forwarded with the Sanitary Commissioner's remarks to the Municipal and Magisterial authorities concerned for the necessary action.

Bulk of the sanitary Inspection work to be performed during recess, so that the working season may not be curtailed. Appointment of Officers of a certain status to control Vaccination

316. In pursuance of the orders in the Resolution quoted, and with the similar intention mentioned, in the immediately preceding paragraph, I submitted for the orders of Government a proposition to employ the Officers of the Vaccination Department more fully in Sanitary Inspections during the recess than during the working season (when necessarily their chief attention is given to vaccination), as vaccination is still very backward in many parts of Bengal, and it would be a pity to retard its slow progress by exacting Sanitary work on a larger scale than is at present done from the vaccination staff during the very short cold season we enjoy. I pointed out that in this arrangement there was nothing which would not coincide with the orders of the Government of India, given in paragraph 7, Notification No. 150, dated the 15th March 1880, and I solicited that, in the event of this suggestion meeting with the approval of

Government, my proposals, submitted in letter No. 570, dated the 21st March 1881, for placing the Vaccination Department on a fair footing, specially with regard to Officers in control of Circles, which had been negatived, be reconsidered, as the importance of sanitary reform in districts is a matter which is becoming more and more imperative, necessitating the appointment as Deputy Sanitary Commissioners of educated officers of such a status that the high officials or landholders will listen to their views on sanitary questions with interest and respect, and that such men may be attracted to, and serve, the department permanently. I mentioned that this office is in possession of voluminous reports (some compiled with much labour) of the sanitary condition of villages in all districts in which vaccination is carried on; but beyond making digests of these and classifying the information for future use in case of legislation, very little result follows for all the trouble taken. The department outside Municipalities has no law to assist its Officers and pursuasion is its only mode of action. This can hardly be said to effect any real or permanent good. With carefully conducted Inspections, of minor Municipalities and Unions, carried on from year to year, distinct but slow sanitary improvement may be looked for; but the great task of this department lies in the reform of the life conditions of the rural population of the Province, and to effect this it will be necessary to have a strong well-paid Sanitary Department, assisted by stringent sanitary laws.

Access given to Officers of the Vaccination Department to registers of Vital Statistics kept at Police stations.

317. Instances which occurred in the Sonthal Pergunnahs Circle in which the Police objected to show the registers of vital statistics kept at the thana to the Officers of the Vaccination Department having been reported to Government, orders were issued resulting in an addition being made in the new Police Department circular, under preparation, permitting such Officers access to the registers in question.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

The 30th July 1885.

APPENDIX No. I.

VITAL STATISTICS OF THE DISTRICTS IN BENGAL

FOR THE YEAR 1884.

Annual Form No. I.—BIRTHS *registered in the principal Municipalities and Towns in the Districts of the Bengal Province during the year* 1884.

1	2	3	4	5			6			7	8	9
Districts.	Number.	Municipalities and Towns.	Population according to Census of 1881.	Number of Births registered.			Ratio of Births per 1,000 of Population.			Number of males born to every 100 females born.	Excess of Births over deaths per 1,000 of Population.	Excess of Deaths over births per 1,000 of Population.
				Male.	Female.	Total.	Male.	Female.	Total.			
Burdwan	1	Burdwan	34,080	475	407	882	8·49	7·27	15·77	116	......	22·72
Bankura	2	Bankura	18,747	316	283	629	18·15	16·09	33·55	122	2·04	......
	3	Bissenpur	21,283	317	274	591	14·89	12·87	27·76	115	2·96	......
Midnapore	4	Midnapore	33,560	378	338	716	11·26	10·07	21·33	111	......	9·89
Hughli	5	Hughli and Chinsurah	38,718	485	399	884	12·52	10·30	22·82	121	......	5·83
	6	Serampore	26,496	478	344	822	18·04	12·97	31·02	138	......	2·98
	7	Uttorpara	5,510	71	67	138	12·88	12·15	25·04	105	1·45	......
Howrah	8	Howrah	90,813	1,386	1,071	2,457	15·26	11·79	27·05	120	......	1·54
	9	Balli	14,515	178	154	332	12·01	10·39	22·40	115	1·21	......
24-Pergunnahs . .	10	Suburbs of Calcutta	251,439	3,112	2,741	5,853	12·37	10·90	23·27	113	......	22·02
	11	Bussirhat	20,450	306	259	565	14·96	12·66	27·62	118	.. .	·20
Nuddea	12	Kishnaghur	27,477	330	285	615	12·01	10·37	22·38	115	......	11·24
	13	Santipore	29,687	293	286	579	9·86	9·63	19·50	102	......	2·15
	14	Ranaghat	8,683	89	64	153	10·24	7·37	17·62	139	......	8·04
Jessore	15	Jessore	8,495	60	34	94	7·06	4·00	11·06	176	......	23·4[illegible]
Rajshahye	16	Beauleah	19,791	144	127	271	7·27	6·41	13·69	113	......	24·0[illegible]
Darjiling	17	Darjiling	7,976	45	21	66	5·63	2·63	8·27	214	......	10·7[illegible]
Dacca	18	Dacca	80,161	843	727	1,570	10·51	9·06	19·58	115	......	12·4[illegible]
Faridpore	19	Faridpore	10,263	83	58	141	8·08	5·65	13·73	143	......	17·0[illegible]
Mymensing	20	Jamalpore	16,001	298	257	555	18·51	15·97	34·49	115	2·69	......
Tipperah	21	Comillah	13,506	176	170	346	13·03	12·58	25·61	103	8·22	......
	22	Brahmanboriah	17,543	351	306	657	20·00	17·44	37·45	114	15·05	......
Chittagong	23	Chittagong	22,130	254	201	455	11·47	9·08	20·56	126	......	2·31
Patna	24	Patna	160,237	1,869	1,454	3,323	11·66	9·07	20·73	128	8·61	......
	25	Behar	48,971	702	617	1,319	14·33	12·59	26·93	113	......	4·6[illegible]
	26	Barrh	23,610	181	195	376	3·46	3·73	7·19	92	......	16·9[illegible]
	27	Mokameh	13,722	200	188	388	8·17	7·96	16·13	106	......	8·2[illegible]
	28	Futua	21,074	109	121	230	7·94	8·81	16·76	90	2·58	......
Gya	29	Gya	76,121	1,147	1,092	2,239	15·06	14·34	29·41	105	......	19·6[illegible]
Shahabad	30	Arrah	43,465	383	340	723	8·81	7·82	16·63	112	......	·9[illegible]
Mozufferpore	31	Mozufferpore	42,742	492	360	852	11·51	8·42	19·93	136	......	3·0
	32	Sitamurhi	6,125	85	64	149	13·87	10·44	24·31	132	1·40	......
Durbhanga	33	Durbhanga	66,096	1,003	952	1,955	15·17	14·40	29·57	105	5·58	......
Sarun	34	Chupra	53,249	534	447	981	10·02	8·39	18·42	119	......	4·8
	35	Revilgunge	12,493	231	174	405	18·49	13·92	32·41	132	3·36	...
Chumparun	36	Bettiah	21,263	389	359	748	18·29	16·88	35·17	108	14·81	......
Monghyr	37	Monghyr	57,520	665	603	1,268	11·56	10·48	22·04	110	......	·5
	38	Jamalpore	13,563	364	306	670	26·83	22·56	49·39	118	16·51	......
	39	Shaikpurah	12,617	181	112	293	14·46	8·94	23·40	161	......	6·0[illegible]
Bhagulpore	40	Bhagulpore	57,453	1,022	925	1,947	17·78	16·10	33·88	110	......	15·2[illegible]
Purneah	41	Purneah	15,016	145	118	263	9·65	7·85	17·51	122	......	17·1[illegible]
Cuttack	42	Cuttack	43,239	356	289	645	8·23	6·68	14·91	123	......	3·2[illegible]
	43	Kendrapara	15,697	274	253	527	24·39	22·52	46·91	108	21·81	......
	44	Jajipur	11,283	60	54	114	3·82	3·44	7·26	111	......	8·42
Poori	45	Poori	24,784	227	200	436	9·15	8·43	17·59	108	......	27·68
Lohardugga	46	Ranchi	18,443	92	76	168	4·98	4·12	9·10	121	......	3·20
Manbhum	47	Purulia	9,304	122	128	250	13·11	13·75	26·87	95	1·62	......
		Grand Total ...	1,685,051	21,331	18,309	39,640	12·65	10·86	23·51	116	......	6·35

Office of the Sany. Commr. for Bengal,
The 24th April 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. II.—*Deaths registered in the* DISTRICTS *of the Bengal Province during the year* 1884.

1	2	3	4	5	6			7	8			9		
					Number of Deaths registered.				Ratio of Deaths per 1,000 of Population.			Mean Ratio of Deaths per 1,000 during previous five years.		
Number.	Districts	Population according to Census of 1881.	Area in square miles.	Average population per square mile.	Male.	Female.	Total.	Number of males died to every 100 deaths of females.	Male.	Female.	Total.	Male.	Female.	Total.
	Burdwan Division.													
	Burdwan	1,391,823	2,697	516·06	17,804	15,394	33,198	115	26·64	21·27	23·85	31·02	25·92	28·37
21	Bankura	1,041,752	2,621	397·46	10,242	8,791	19,033	116	20·19	16·44	18·27	22·03	19·23	20·59
3	Birbhum	794,428	1,756	452·40	10,506	10,162	20,668	103	27·53	24·61	26·01	28·14	24·10	26·04
4	Midnapore ...	2,515,565	*5,082	494·99	27,320	23,453	50,773	116	21·97	18·43	20·18	20·31	16·68	18·47
5	Hughli	663,050	*880	753·46	7,023	6,463	13,486	108	22·24	18·60	20·33	21·57	18·15	19·60
6	Serampore ...	351,955	343	1,026·11	3,771	3,165	6,936	119	21·62	17·82	19·70	19·40	14·76	17·63
	Total of Hughli, including Serampore... ...	1,015,005	1,223	829·93	10,794	9,628	20,422	112	22·02	18·43	20·12	20·80	17·27	18·97
7	Howrah	635,381	476	1,334·83	6,901	5,456	12,357	126	21·80	17·10	19·44	18·97	14·83	16·89
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	1,618,420	2,097	771·78	17,600	14,113	31,713	124	21·25	17·86	19·59	22·39	17·90	20·20
	Suburbs of Calcutta ...	251,439	23	10,932·13	6,749	4,640	11,389	145	45·84	44·51	45·29	47·55	47·25	47·43
	Total of 24-Pergunnahs	1,869,859	2,120	882·00	24,349	18,753	43,102	129	24·98	20·96	23·05	26·19	21·32	23·86
9	Nuddea	1,655,721	2,755	600·98	36,445	29,135	65,580	125	45·22	34·27	39·60	43·31	34·38	38·72
10	Jessore	1,939,375	2,925	66[illegible]·03	29,250	23,915	53,165	122	30·49	24·40	27·41	25·96	20·75	23·32
11	Murshidabad ...	1,226,790	2,144	572·20	18,241	14,859	33,100	122	31·10	23·20	26·98	29·36	21·87	25·45
12	Khulna	1,079,948	2,077	519·96	14,215	12,474	26,689	114	25·00	24·38	24·71	22·05	22·25	9·05
	Rajshahye Division.													
13	Dinagepore ...	1,514,346	4,118	367·74	15,715	10,982	26,697	144	20·08	15·00	17·62	21·93	16·82	19·16
14	Rajshahye	1,338,638	2,361	566·98	26,698	22,156	48,854	120	40·13	32·65	36·49	29·95	23·27	26·56
15	Rungpore	2,097,964	3,486	601·83	21,932	17,576	39,508	125	20·59	17·05	18·86	16·78	13·00	14·92
16	Bogra	734,358	1,498	490·23	9,999	8,342	18,341	110	26·83	23·06	24·97	20·93	17·50	19·23
17	Pubna	1,311,728	1,847	710·19	22,830	19,716	42,546	115	33·21	29·71	32·43	17·37	13·70	15·51
18	Darjiling	156,137	1,234	126·53	1,213	787	2,000	154	13·56	11·79	12·80	8·09	6·30	7·20
19	Julpaiguri... ...	581,562	2,884	201·65	6,445	4,946	11,391	130	21·09	17·91	19·58	15·76	13·31	14·60
	Dacca Division.													
20	Dacca	2,116,350	2,797	756·65	26,581	22,876	49,457	116	25·71	21·18	23·36	18·91	15·03	16·92
21	Faridpore	1,631,734	2,267	719·78	17,102	14,062	31,164	121	21·21	17·02	19·09	13·38	9·89	11·61
22	Backergunge ..	1,900,889	3,649	520·93	27,806	25,110	52,916	110	28·56	27·07	27·83	19·36	16·84	18·12
23	Mymensing	3,051,966	6,287	485·44	21,843	17,380	39,223	125	14·06	11·39	12·85	8·51	6·36	7·45
	Chittagong Division.													
24	Chittagong	1,132,341	2,567	441·11	9,120	7,964	17,084	114	17·15	13·25	15·08	20·04	14·65	17·18
25	Noakhalli	820,772	1,641	500·17	9,409	8,733	18,142	107	22·65	21·53	22·10	18·59	16·10	17·36
26	Tipperah	1,519,338	2,491	609·93	13,513	11,677	25,190	115	17·53	15·60	16·57	12·56	9·90	11·25
	Patna Division.													
27	Patna	1,756,856	2,079	845·05	23,453	20,816	44,269	112	27·30	23·17	25·19	27·22	23·27	23·20
28	Gya	2,124,682	4,712	450·91	29,931	27,006	56,937	110	28·68	24·97	26·79	19·18	16·21	17·67
29	Shahabad	1,964,909	4,365	450·15	17,724	15,113	32,837	117	18·65	14·89	16·71	16·01	13·10	14·94
30	Mozufferpore	2,582,060	3,003	859·83	17,797	14,256	32,053	125	14·06	10·83	12·41	16·78	12·05	14·36
31	Durbhanga ...	2,633,447	3,335	789·64	15,594	13,202	28,796	118	12·05	9·86	10·93	14·47	10·51	12·16
32	Sarun	2,280,382	2,622	869·71	27,850	22,121	49,971	125	25·70	18·48	21·91	16·21	10·87	13·41
33	Chumparun	1,721,608	3,531	487·57	17,456	14,187	31,643	123	20·04	16·07	18·37	13·97	10·13	12·07
	Bhagulpore Division.													
34	Monghyr	1,969,774	3,921	502·37	17,049	14,524	31,573	117	17·58	14·51	16·02	14·77	11·60	13·16
35	Bhagulpore	1,966,158	4,268	460·67	22,732	19,866	42,598	114	23·21	20·12	21·64	17·34	13·65	15·49
36	Purneah	1,848,687	4,956	373·02	18,179	18,341	31,520	136	19·39	14·63	17·04	19·91	16·01	17·99
37	Maldah	710,448	1,891	375·70	7,377	5,667	13,044	130	21·25	15·59	18·36	21·65	15·14	18·31
38	Sonthal Pergunnahs	1,568,093	5,456	287·41	13,904	10,439	24,343	133	17·70	13·33	15·52	11·98	9·37	10·68
	Orissa Division.													
39	Cuttack	1,795,065	3,633	494·09	20,007	18,639	38,646	107	22·79	20·31	21·52	20·10	17·50	18·77
40	Poori	888,487	2,473	359·27	10,512	10,004	20,516	105	23·53	22·63	23·09	2[illegible]·28	10·26	20·28
41	Balasore	945,280	2,066	457·54	13,802	12,743	26,545	108	29·90	26·33	28·08	23·69	20·00	21·30
	Chota Nagpore Division.													
42	Hazaribagh	1,104,742	7,021	157·35	12,503	10,930	23,433	114	22·94	19·72	21·21	14·91	12·40	13·64
43	Lohardugga	1,609,244	12,045	133·60	12,957	11,076	24,033	116	16·26	13·63	14·93	19·37	15·91	17·64
44	Singbhum	561,964	4,336	129·60	4,912	3,984	8,896	123	17·48	14·13	15·88	15·60	12·95	14·29
45	Manbhum	1,058,228	4,147	255·18	9,041	7,256	16,297	124	17·21	13·61	15·40	13·44	10·57	11·90
	Total for the Province	66,163,881	144,863	456·73	749,113	629,497	1,378,610	119	22·81	18·88	20·83	19·22	15·41	17·30

* A village was transferred from Midnapore to Hughli, but as its area in square miles is not known, these figures cannot be altered so as to indicate the reduction and increase respectively caused by the transfer.

Office of the Sany. Commr. for Bengal,
The 24th April 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. III.—*Deaths registered in the Districts of the Bengal Province during* EACH MONTH *of the year* 1884.

1	2													4
Number.	DISTRICTS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL DEATHS REGISTERED DURING THE YEAR.
	Burdwan Division.													
1	Burdwan	2,938	2,674	3,266	3,626	2,962	2,382	2,042	1,912	1,931	2,884	3,219	3,369	33,198
2	Bankura	1,799	1,694	1,919	1,920	1,867	1,503	1,301	1,233	1,124	1,626	1,082	1,455	19,033
3	Birbhum	1,832	1,806	1,895	2,091	1,814	1,359	1,458	1,336	1,254	1,518	2,184	2,091	20,668
4	Midnapore	5,554	6,009	4,478	4,130	3,904	3,323	3,381	3,610	3,261	3,860	4,972	5,291	50,773
5	Hughli	1,172	1,137	1,211	1,274	983	704	713	761	856	1,229	1,723	1,723	13,486
6	Serampore	656	541	676	734	428	307	354	388	472	584	848	948	6,936
	Total of Hughli, including Serampore	1,828	1,678	1,887	2,008	1,411	1,011	1,067	1,149	1,328	1,813	2,571	2,671	20,422
7	Howrah	1,060	960	1,264	1,375	946	688	731	739	828	986	1,195	1,585	12,357
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	2,995	2,509	2,834	2,525	1,976	1,501	1,824	2,208	2,047	2,671	3,846	4,777	31,713
	Suburbs of Calcutta	977	877	1,077	1,568	905	674	794	732	731	808	1,128	1,118	11,389
	Total of 24-Pergunnahs ...	3,972	3,386	3,911	4,093	2,881	2,175	2,618	2,940	2,778	3,479	4,974	5,895	43,102
9	Nuddea	5,261	4,115	6,422	10,782	5,688	3,810	3,488	3,209	4,458	5,109	6,575	6,663	65,580
10	Jessore	5,247	3,809	4,117	5,813	3,702	2,553	2,148	2,713	2,832	1,392	7,875	7,613	53,165
11	Murshidabad	2,268	1,998	3,161	6,028	3,188	1,643	1,457	1,712	1,695	2,866	3,854	2,932	33,100
12	Khulna	2,420	1,654	1,905	2,258	2,004	1,559	1,192	1,087	1,700	2,321	3,622	4,061	26,689
	Rajshahye Division.													
13	Dinagepore	2,545	2,440	2,509	2,179	2,165	1,810	1,845	1,817	1,610	1,860	2,663	3,254	26,697
14	Rajshahye...	3,969	3,138	3,520	6,399	4,684	2,787	2,320	3,376	2,938	4,018	6,750	4,955	48,854
15	Rungpore	4,163	3,576	3,635	2,914	2,882	2,894	2,636	2,467	2,454	2,823	4,082	4,142	39,568
16	Bogra	1,453	1,150	1,093	1,153	1,014	1,139	1,296	1,145	1,368	2,174	2,839	2,217	18,341
17	Pubna	4,691	2,780	3,019	4,468	4,045	2,113	1,797	1,734	1,900	4,415	6,510	5,044	42,546
18	Darjiling	73	76	75	87	107	137	167	281	317	268	214	198	2,000
19	Julpaiguri	819	790	854	1,014	1,033	968	923	791	690	918	1,025	1,566	11,391
	Dacca Division.													
20	Dacca	5,190	3,568	4,105	5,548	3,617	2,331	2,330	2,440	2,878	4,315	6,993	6,142	49,457
21	Faridpore	3,092	1,998	2,311	3,989	2,164	1,318	1,068	1,247	1,530	2,760	5,046	4,641	31,164
22	Backergunge	5,133	3,650	4,586	5,188	5,467	3,080	2,812	2,733	2,914	3,832	6,001	7,214	52,916
23	Mymensing	3,478	2,763	2,662	3,573	3,742	2,855	2,318	2,070	2,226	3,083	5,107	5,346	39,223
	Chittagong Division.													
24	Chittagong	1,453	1,188	1,000	999	1,488	1,600	1,559	1,268	1,176	1,188	1,604	2,386	17,084
25	Noakhalli	1,848	1,587	1,393	1,368	1,283	1,366	1,183	1,585	1,392	1,397	1,655	2,090	18,142
26	Tipperah	2,254	1,852	1,798	1,880	1,803	1,471	1,380	1,525	1,738	2,483	3,078	3,928	25,190
	Patna Division.													
27	Patna	2,008	2,003	3,038	3,619	3,458	4,652	4,474	7,025	4,080	3,219	3,836	2,857	44,269
28	Gya	2,774	3,174	3,973	4,476	4,142	4,407	6,208	8,388	6,671	4,748	4,224	3,453	56,937
29	Shahabad	1,697	1,653	1,768	2,323	2,856	2,826	3,076	4,569	3,860	3,086	2,752	2,371	34,837
30	Mozufferpore	2,407	2,042	2,162	2,379	2,292	2,473	2,546	2,939	2,963	2,948	3,828	3,074	32,053
31	Durbhanga	2,592	2,246	2,263	2,275	2,346	2,270	2,201	2,362	2,263	2,242	3,187	2,550	28,796
32	Sarun	2,050	2,856	4,344	4,891	5,073	4,497	4,476	5,636	4,655	3,848	3,583	3,164	49,971
33	Chumparun	2,033	1,708	2,383	2,203	2,289	3,032	2,504	3,620	2,599	2,720	3,681	2,871	31,643
	Bhagulpore Division.													
34	Monghyr	1,285	1,182	1,887	2,849	2,280	2,627	2,651	3,451	3,318	3,554	3,531	2,958	31,573
35	Bhagulpore	2,858	2,438	3,020	3,604	4,031	3,843	3,447	3,865	3,339	3,627	4,672	3,851	42,598
36	Purneah	2,895	2,735	2,070	2,080	2,391	1,904	2,030	1,913	2,125	2,496	3,697	3,984	31,[illegible]20
37	Maldah	955	889	1,042	1,284	1,625	935	704	673	813	1,099	1,291	1,734	13,044
38	Sonthal Pergunnahs	1,377	1,312	1,648	2,221	2,596	2,366	2,386	2,517	1,896	2,149	2,022	1,854	24,343
	Orissa Division.													
39	Cuttack	3,175	2,591	2,688	2,846	2,593	2,949	3,214	2,975	3,135	3,886	4,402	4,197	38,646
40	Poori	1,997	1,523	1,382	1,289	1,228	1,481	2,039	1,433	1,524	1,655	2,372	2,593	20,516
41	Balasore	2,314	1,970	1,722	2,186	3,271	3,619	2,485	1,556	1,509	1,734	2,060	2,119	26,545
	Chota Nagpore Division.													
42	Hazaribagh	1,43	1,246	1,601	2,117	2,083	2,034	2,144	3,033	2,499	2,120	1,728	1,391	23,433
43	Lohardugga	1,712	1,570	1,662	1,746	1,839	1,781	1,917	2,620	2,956	2,428	2,111	1,091	24,[illegible]33
44	Singbhum	684	745	685	899	830	754	723	782	785	661	695	653	8,806
45	Manbhum	906	832	1,071	1,964	2,000	1,843	1,460	1,499	1,222	1,192	1,236	988	16,297
	TOTAL FOR THE PROVINCE ...	113,000	94,020	107,819	132,729	115,777	98,258	95,802	107,875	100,532	115,823	151,886	145,089	1,378,610
	RATIO OF DEATHS PER 1,000 OF POPULATION IN EACH MONTH	1·70	1·42	1·62	2·00	1·74	1·48	1·44	1·63	1·51	1·75	2·29	2·19	20·83

OFFICE OF THE SANY. COMMR. FOR BENGAL,

The 24th April 1885.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

ANNUAL FORM No. IV—*Deaths registered according to* AGE *in the Districts of the Bengal Province during the year* 1884.

1	2	3		4		5		6		7		8		9		10		11		12
Number	DISTRICTS	UNDER 1 YEAR		1 AND UNDER 5 YEARS		5 AND UNDER 10 YEARS		10 AND UNDER 15 YEARS		15 AND UNDER 20 YEARS		20 AND UNDER 30 YEARS		30 AND UNDER 40 YEARS		40 AND UNDER 50 YEARS		50 AND UNDER 60 YEARS.		60 YEARS UPWARDS
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female.	Male.
	Burdwan Division																			
1	Burdwan	[illegible]	1,731	[illegible]	[illegible]	[illegible]	1,031	9	[illegible]	[illegible]	[illegible]	2,767	[illegible]	[illegible]	1,141	[illegible]	1,783	1,599	1,896	2,046
2	Bankura	[illegible]	[illegible]	[illegible]	711	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	54	1,318	[illegible]	[illegible]	911	[illegible]	834	992	885	1,382
3	Beerbhoom	[illegible]	[illegible]	[illegible]	847	764	[illegible]	[illegible]	[illegible]	485	[illegible]	1,148	1,241	[illegible]	[illegible]	[illegible]	[illegible]	1,015	1,001	1,145
4	Midnapore	[illegible]	[illegible]	[illegible]	2,?87	1,771	[illegible]	134	[illegible]	[illegible]	[illegible]	[illegible]	3,17	[illegible]	2,810	3,100	[illegible]	2,031	2,?0	3,902
5	Hughli	[illegible]	[illegible]	[illegible]	[illegible]	438	[illegible]	7	[illegible]	[illegible]	[illegible]	[illegible]	1,013	[illegible]	830	937	504	721	628	683
6	Serampore	[illegible]	[illegible]	[illegible]	814	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	370	488	328	350	293	431
	Total of Hughli including Serampore	1,334	1,03?	[illegible]	813	[illegible]	[illegible]		1	7?	71	1,101	[illegible]	1,?23	1,?30	1,42?	1,13?	1,077	921	1,114
7	Howrah	1,?17	[illegible]	78	71?	[illegible]	[illegible]	[illegible]	[illegible]	31	29	813	[illegible]	750	[illegible]	6?	419	520	399	1,056
	Presidency Division																			
8	24-Pergunnahs exclusive of Suburbs of Calcutta	1,8?	1,13		[illegible]	1,910	13	1,110	7?	1,148	1,071	131	[illegible]	21??	1,41?	1,0?1	1,033	1,494	1,115	2,195
	Suburbs of Calcutta	1			[illegible]			[illegible]	1	1?3	[illegible]	[illegible]	[illegible]	1,?13	585	633	332	441	332	475
	Total of 24-Pergunnahs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,?71	[illegible]	[illegible]	2,171	[illegible]	[illegible]	[illegible]	1,425	1,935	1,447	2,670
9	Nuddea	3,0??	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,??	[illegible]	[illegible]	171	3,747	[illegible]	[illegible]	[illegible]	[illegible]	2,1??	2,532	2,023	3,732
10	Jessore	1	1,414	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	153	[illegible]	[illegible]	[illegible]	3,137	2,317	2,738	2,241	3,930
11	Murshidabad	1	[illegible]	[illegible]	[illegible]		[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	1,148	[illegible]	[illegible]	[illegible]	1,069	1,375	1,228	1,600
12	Khulna	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	834	1,018	1,415	1,170	1,183	[illegible]	1,360	[illegible]	1,175	886	1,947
	Rajshahye Division																			
13	Dinagepore	[illegible]	[illegible]	1,0??	[illegible]	[illegible]	[illegible]	[illegible]	597	13	9?0	[illegible]	[illegible]	2,?01	[illegible]	2,21?	[illegible]	1,514	918	1,480
14	Rajshahye	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,740	[illegible]	[illegible]	[illegible]	893	[illegible]	2,?9	2,1?3	[illegible]	1,403	2,088
15	Rungpore	[illegible]	[illegible]	1	[illegible]	[illegible]	1,108	[illegible]	[illegible]	[illegible]	1,180	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,1?0	2,243	1,593	2,809
16	Bogra	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	733	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	1,10	794	7?2	560	1,193
17	Pubna	[illegible]	[illegible]	[illegible]	[illegible]	318	2,1?8	[illegible]	[illegible]	89	[illegible]	[illegible]	[illegible]	2,?10	1,?80	[illegible]	1,6?8	[illegible]	1,383	2,991
18	Darjeeling	11?	[illegible]	[illegible]	127	[illegible]	[illegible]	8	1?	8	48	21	1	[illegible]	[illegible]	11	[illegible]	66	41	87
19	Julpaiguri	7	[illegible]		182	34	[illegible]	31?	241	42?	40?	785	678	[illegible]	[illegible]	878	[illegible]	734	545	648
	Dacca Division																			
20	Dacca	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	10?	1,030	[illegible]	[illegible]	[illegible]	[illegible]	2,230	[illegible]	1,71?	1,791	1,40?	4,090
21	Furreedpore	[illegible]	[illegible]	[illegible]	187	[illegible]	[illegible]	1,100	[illegible]	948	1,172	[illegible]	[illegible]	176	[illegible]	[illegible]	[illegible]	1,517	1,0??	2,137
22	Backergunge	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	88	[illegible]	1,310	2,01?	3,193	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4,054
23	Mymensing	[illegible]	[illegible]	1?	[illegible]	1,?80	[illegible]	[illegible]	71	1,0?1	1,?50	[illegible]	2,73?	3,0??	[illegible]	2,615	1,513	1,131	1,011	3,413
	Chittagong Division																			
24	Chittagong	[illegible]	[illegible]	[illegible]	8	7?	2		33?	57?	[illegible]	1,0?	[illegible]	[illegible]	[illegible]	1,045	702	958	684	1,324
25	Noakholly	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	339	[illegible]	[illegible]	1,018	8	834	884	665	[illegible]	531	1,186
26	Tipperah	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	717	[illegible]	500	7??	[illegible]	1,377	1,?81	1,59?	1,193	1,101	[illegible]	1,045	863	2,164
	Patna Division																			
27	Patna	5,17	[illegible]	[illegible]	4,448	1,671	[illegible]	9	[illegible]	[illegible]	591	1,900	[illegible]	1,70?	1,315	1,872	1,471	2,025	1,887	2,627
28	Gya	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,4?0	[illegible]	73	717	[illegible]	2,1?8	[illegible]	[illegible]	1,910	2,118	2,110	2,?25	2,?03	3,932
29	Shahabad	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	73	[illegible]	[illegible]	[illegible]	1,?12	[illegible]	[illegible]	[illegible]	[illegible]	1,?00	1,?52	1,271	2,183
30	Mozufferpore	1,483	1,081	[illegible]	2,031	[illegible]	[illegible]	[illegible]	[illegible]	833	[illegible]	2,157	1,481	2,?17	16?	[illegible]	1,554	2,0?3	1,?91	2,202
31	Durbhunga	[illegible]	[illegible]	[illegible]	1,?87	[illegible]	[illegible]	8?3	[illegible]	[illegible]	[illegible]	[illegible]	1,33?	2,073	[illegible]	[illegible]	1,445	1,029	[illegible]	2,445
32	Sarun	6?0	[illegible]	[illegible]	418	1,813	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,4?4	[illegible]	[illegible]	1,83?	[illegible]	1,752	2,1?7	2,0?7	2,715
33	Chumparun	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,?38	1,352	[illegible]	1,132	1,843	1,203	1,010	1,516	2,121
	Bhagulpore Division																			
34	Monghyr	[illegible]	[illegible]	[illegible]	[illegible]	1,307	1,017	[illegible]	551	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,117	[illegible]	1,133	1,703	1,894	1,907
35	Bhagulpore	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	704	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2,?25	1,902	1,810	1,679
36	Purneah	1,308	[illegible]	[illegible]	[illegible]	[illegible]	800	1,08?	744	[illegible]	[illegible]	[illegible]	[illegible]	3,251	2,11?	2,517	1,5?0	1,670	1,359	1,419
37	Maldah	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	708	5	[illegible]	418	[illegible]	[illegible]	[illegible]	21	58?	771	[illegible]	497	440	822
38	Sonthal Pergunnahs	1,08?	1,317	[illegible]	[illegible]	1,502	1,06?	908	620	102	[illegible]	1,77?	[illegible]	1,491	98?	1,215	813	943	778	1,505
	Orissa Division																			
39	Cuttack	3,73	[illegible]	[illegible]	[illegible]	1,370	[illegible]	779	[illegible]	[illegible]	[illegible]	2,168	[illegible]	[illegible]	1,7?7	1,794	1,174	1,605	1,497	2,780
40	Pooree	[illegible]	[illegible]	[illegible]	1,060	61	[illegible]	24	[illegible]	[illegible]	[illegible]	[illegible]	1,111	[illegible]	848	[illegible]	654	987	843	1,491
41	Balasore	[illegible]	[illegible]	[illegible]	1,?10	1,047	879	[illegible]	533	633	[illegible]	1,132	[illegible]	[illegible]	1,371	1,355	980	1,081	1,041	1,474
	Chota Nagpore Division																			
42	Hazaribagh	1,80?	[illegible]	[illegible]	[illegible]	814	642	[illegible]	38	[illegible]	[illegible]	1,?00	[illegible]	1,476	1,075	1,218	852	1,087	1,152	1,471
43	Lohardugga	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	703	[illegible]	47	55?	487	1,181	1,041	1,?02	1,008	1,181	988	1,224	1,069	[illegible]
44	Singbhum	[illegible]	5?4	701	[illegible]	317	324	23	[illegible]	200	[illegible]	[illegible]	377	[illegible]	297	[illegible]	432	481	302	[illegible]
45	Manbhum	1,10?	915	1,111	[illegible]	774	616	586	[illegible]	[illegible]	504	1,1?0	879	1,010	656	850	500	799	691	[illegible]
	TOTAL FOR THE PROVINCE	100,509	[illegible]	100,636	91,633	65,026	49,710	41,41?	27,219	[illegible]	35,534	83,064	76,659	88,077	65,611	78,333	55,595	63,196	53,497	[illegible]
	RATIO PER 1,000 LIVING	130·?6	10?·45	25·?0	[illegible]	12·71	10·36	11·0?	[illegible]	[illegible]	[illegible]	16·1?	12·97	18·22	13·09	24·26	17·53	33·57	26·37	[illegible]

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24*th April* 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. V.—*Deaths registered according to* CLASS *in the Districts of the Bengal Province during the year* 1884.

1	2	3						4						5					
		Population according to Census of 1881.						Number of Deaths registered.						Ratio of Deaths per 1,000 of Population.					
Number.	Districts.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Budhists.	Other classes.	Total.
	Burdwan Division.																		
1	Burdwan	910	1,120,676	263,516	.	6,121	1,391,823	11	26,751	6,081		355	33,198	12·08	23·87	23·05	...	55·28	[illegible]
2	Bankura	56	910,845	16,274	...	84,577	1,011,752	1	17,653	537	..	682	19,643	17·85	19·24	15·92	...	7·82	[illegible]
3	Birbhum	48	617,316	162,021	...	14,149	794,428	1	16,509	3,965	.	193	20,668	20·83	26·74	24·38	...	13·35	[illegible]
4	Midnapore	740	2,233,300	164,001	36	117,488	2,515,565	10	36,130	2,721	.	1,012	50,773	13·51	[illegible]	16·59	...	16·97	[illegible]
5	Hughli	290	533,033	129,702	2	23	663,050	4	10,511	2,998	.	.	13,186	15·79	19·78	22·65	...	...	[illegible]
6	Serampore	365	292,174	59,098	288	30	351,955	3	5,761	1,172	.	..	6,936	82·19	19·71	19·84	...	...	[illegible]
	Total of Hughli, including Serampore	655	825,207	188,800	290	53	1,015,005	7	16,305	4,110		.	20,422	10·68	19·75	21·76	...	..	[illegible]
7	Howrah	2,051	500,870	132,118	37	305	635,381	17	9,874	2,450		16	12,357	8·28	19·75	18·54	...	52·45	[illegible]
	Presidency Division.																		
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	9,028	1,003,110	604,723	230	429	1,618,420	134	19,890	11,687	..	2	31,713	13·49	19·82	19·32	..	4·60	[illegible]
	Suburbs of Calcutta ...	4,048	149,930	96,583	127	751	251,439	191	7,339	3,859		.. .	11,389	47·18	48·91	39·95	...	...	[illegible]
	Total of 24-Pergunnahs	13,076	1,153,040	701,306	357	1,180	1,869,859	325	27,229	15,546		2	43,102	23·25	23·61	22·16	...	1·60	[illegible]
9	Nuddea	6,422	727,890	921,395	1	13	1,655,721	171	27,029	38,380	..	.. ..	65,580	26·62	37·13	41·65	...	.	[illegible]
10	Jessore	492	768,322	1,170,505	...	56	1,939,375	10	20,811	32,344		...	53,165	20·32	27·08	27·54	..	..	[illegible]
11	Murshidabad	470	631,796	589,957	1	1,566	1,223,790	5	15,949	17,140	.	6	33,100	10·63	25·12	29·05	...	3·83	[illegible]
12	Khulna	747	523,657	555,544	...	......	1,079,948	5	12,467	14,217		.....	26,689	6·69	23·80	25·59	...	.	[illegible]
	Rajshahye Division.																		
13	Dinagepore	457	716,630	795,824	...	1,435	1,514,346	7	11,384	15,231	...	75	26,697	17·50	15·88	19·14	...	52·26	[illegible]
14	Rajshahye	121	288,749	1,049,700	55	13	1,338,638	...	8,439	40,415	...	..	48,854	..	29·22	38·50	...	...	[illegible]
15	Rungpore	86	816,532	1,279,605	60	1,681	2,097,964	..	14,408	25,144		16	39,568		17·64	19·65	...	9·51	[illegible]
16	Bogra	27	146,860	583,411	2	58	731,858		3,519	14,832		......	18,341		24·06	24·97	...		[illegible]
17	Pubna	114	361,479	949,908	1	226	1,311,728	.	11,831	30,715	..	..	42,546	.	32·72	32·33	...	...	[illegible]
18	Darjiling	1,800	126,717	8,204	18,775	641	156,137	20	1,677	102	152	19	2,000	11·11	13·23	12·43	8·09	76·44	[illegible]
19	Julpaiguri...	159	367,801	208,513	486	4,513	581,562	...	6,766	4,474	1	150	11,391	...	18·39	21·45	2·05	33·23	[illegible]
	Dacca Division.																		
20	Dacca	8,799	856,680	1,250,687	49	135	2,116,350	201	20,506	28,750	...	..	49,457	22·84	23·93	22·98	...	...	[illegible]
21	Faridpore	2,741	653,902	974,983	13	5	1,631,734	40	12,950	18,174	...	.	31,164	14·59	19·80	18·53	...	...	[illegible]
22	Backergunge	3,717	624,597	1,267,694	4,797	84	1,900,889	85	15,044	37,131	56	... .	52,316	24·18	25·04	29·13	11·67	..	[illegible]
23	Mymensing	151	987,355	2,038,505	...	25,955	3,051,966	1	14,453	24,296	.	473	39,223	6·62	14·64	11·91	...	18·22	[illegible]
	Chittagong Division.																		
24	Chittagong	1,055	275,177	801,986	54,110	13	1,132,341	25	4,219	11,949	891	.	17,084	23·69	15·33	14·89	16·46	...	[illegible]
25	Noakhalli	588	211,476	608,592	114	2	820,772	11	4,170	13,961	.	....	18,142	18·70	19·72	22·93	...	...	[illegible]
26	Tipperah	199	511,025	1,007,740	374	......	1,519,338	2	9,520	15,668	...	. .	25,190	10·05	18·62	15·54	...	...	[illegible]
	Patna Division.																		
27	Patna	2,538	1,541,061	213,141	...	66	1,756,856	9	39,132	5,128	..	......	44,269	3·47	25·39	24·05	...	...	[illegible]
28	Gya	96	1,891,484	[illegible]33,098	..	4	2,124,682	...	50,879	6,058	...	. ..	56,937		27·32	25·98	...	...	[illegible]
29	Shahabad	276	1,817,881	146,732	..	20	1,964,909	4	30,504	2,329	...	. ..	32,837	14·49	16·77	15·88	...	...	[illegible]
30	Mozufferpore	372	2,265,360	316,308	...	......	2,582,040	5	28,766	3,282	...	...	32,053	13·44	12·69	10·37	...	...	[illegible]
31	Durbhanga	325	2,323,979	308,985	...	158	2,633,447	9	25,642	3,145	.	. ...	28,796	27·69	11·03	10·17	..	...	[illegible]
32	Sarun	282	2,010,958	269,142	...	... ..	2,280,382	1	44,268	5,702	.	.. ..	49,971	3·54	22·01	21·18	...	...	[illegible]
33	Chumparun	1,936	1,470,985	242,087	..	......	1,721,608	55	27,641	3,947	...	......	31,643	28·40	18·71	16·26	...	...	[illegible]
	Bhagulpore Division.																		
34	Monghyr	1,091	1,774,013	187,517	...	7,153	1,969,774	24	28,528	2,983	..	38	31,573	21·99	16·08	15·90	...	5·31	[illegible]
35	Bhagulpore	578	1,764,304	185,533	...	15,743	1,966,158	11	38,972	3,487	...	128	42,598	19·03	22·08	18·79	...	8·13	[illegible]
36	Purneah	327	1,076,530	771,130	...	691	1,848,687	1	19,049	12,469	...	1	31,520	3·05	17·69	16·16	...	1·44	[illegible]
37	Maldah	26	379,153	329,525	...	1,744	710,448	...	7,271	5,734	.	39	13,044		19·17	17·40	..	22·36	[illegible]
38	Sonthal Pergunnahs ...	3,057	847,590	108,800	132	608,415	1,568,093	6	15,311	2,075	..	6,951	24,343	1·96	18·05	19·05	...	11·43	[illegible]
	Orissa Division.																		
39	Cuttack	2,342	1,744,227	47,529	3	964	1,795,065	20	38,025	598	...	3	38,646	8·53	21·80	12·58	..	3·25	[illegible]
40	Poori	819	873,604	14,003	...	1	888,427	6	20,310	200	...	....	20,516	7·32	23·24	14·28	...		[illegible]
41	Balasore	815	915,792	23,804	4	4,865	945,280	7	26,000	462	..	76	26,545	8·58	28·39	19·36	...	15·62	[illegible]
	Chota Nagpore Division.																		
42	Hazaribagh	552	924,811	106,097	...	73,282	1,104,742	4	19,699	2,184		1,596	23,483	7·24	21·30	20·11	...	21·77	[illegible]
43	Lohardugga	36,281	868,842	77,403	1	626,717	1,609,244	248	11,093	1,282	...	11,410	24,033	6·83	12·76	16·56	...	18·20	[illegible]
44	Singbhum	2,988	555,046	3,252	...	648	561,964	17	8,786	71	...	22	8,896	5·68	15·82	21·83	...	33·95	[illegible]
45	Manbhum	552	940,247	45,453	23	65,953	1,052,228	5	14,374	720	...	1,198	16,297	9·05	15·19	15·84	...	18·16	[illegible]
	Total for the Province	101,884	42,953,029	21,861,957	70,721	1,667,293	66,163,884	1,387	870,423	480,320	1,100	25,371	1,378,610	13·61	20·26	22·48	13·79	15·21	[illegible]

Office of the Sany. Commr. for Bengal,
The 24th April 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. VI—*Deaths registered from* DIFFERENT CAUSES *in the*

1	2	3	4	5	6	7
Number.	Districts and Towns.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	DISTRICTS.					
	Burdwan Division.					
1	Burdwan	1,335,905	2,120	153	25,036	409
2	Bankura	989,106	1,092	19	13,306	492
3	Birbhum	786 580	1,164	34	15,350	102
4	Midnapore	2,446,201	3,617	167	36,516	3,629
5	Hughli	593 655	523	49	9,175	948
6	Serampore	305,231	443	22	3,745	665
	Total of Hughli including Serampore ...	898,886	966	71	12,920	1,013
7	Howrah	629,753	712	21	4,362	2,129
	Presidency Division.					
8	24-Pergunnahs	1,424,329	3,677	65	19,727	977
9	Nuddea	1,590,321	9,325	274	40,651	479
10	Jessore	1,930,880	6,535	20	43,216	213
11	Murshidabad	1,143,106	5,775	48	23,468	186
12	Khulna	1,071,210	2,842	13	19,846	342
	Rajshahye Division.					
13	Dinagepore	1,501,786	173	55	24,358	178
14	Rajshahye	1,318,847	6,342	10	40,451	95
15	Rungpore	2,084,644	1,159	4	35 616	330
16	Bogra	728,179	1,375	16	15,262	88
17	Pubna ... ... -	1,275,424	4,261	18	34,978	378
18	Darjeeling	148,161	26	......	1,251	328
19	Julpigori	573,615	200	......	10,474	92
	Dacca Division.					
20	Dacca	2,093,628	7,863	288	27,407	2,870
21	Faridpore	1,621,471	8,662	72	19,073	758
22	Backergunge	1,887,703	8,736	183	29,250	854
23	Mymensing	3,004,853	6,204	160	25,825	1,024
	Chittagong Division.					
24	Chittagong	1,110,211	1,153	1	11,190	544
25	Noakhalli	815,618	1,352	575	12,928	267
26	Tipperah	1,488,289	3,009	198	16,098	779
	Patna Division.					
27	Patna	1,437,017	3,106	1,301	23,477	3,471
28	Gya . . .. -	2,038,691	1,662	2,744	42,603	552
29	Shahabad	1,885,941	1,598	336	24,712	524
30	Mozufferpore .. -	2,490,715	294	195	21,578	1,502
31	Durbhunga	2,567,351	642	227	21,587	2.082
32	Sarun	2,201,333	1,201	2,771	19,751	3,650
33	Chumparun	1,700,345	646	1,710	21,290	322
	Bhagulpore Division.					
34	Monghyr	1,886,174	1,154	746	25,297	300
35	Bhagulpore	1,908,705	1,335	589	31,144	1,875
36	Purneah	1,833,671	415	39	29,268	172
37	Maldah	698,018	1,083	11	11,056	20
38	Sonthal Pergunnahs	1,560,088	2,670	240	19,138	399
	Orissa Division.					
39	Cuttack	1,724,896	,234	982	15,637	3,894
40	Poori	863,703	2,793	240	2,411	2,593
41	Balasore	925,015	7,112	209	7,833	4,803
	Chota Nagpore Division.					
42	Hazaribagh	1,089,436	1,270	810	17,959	1,029
43	Lohardugga	1,590,801	191	152	18,060	1,944
44	Singbhum	555,958	111	21	6,212	960
45	Manbhoom	1,048,924	1,838	28	10,581	1,084
	Total for Districts ...	63,705,518	125,031	15,822	934,532	50,302
	TOWNS.					
	Burdwan District.					
1	Burdwan	34,080	53	13	869	127
2	Kalna	10,901	35	......	166	21
3	Ranigunge	10,987	71	20	119	73
	Bankura District.					
4	Bankura	18,747	70	......	254	48
5	Bishenpore	21,283	5	......	343	14
6	Sonamukhi	12,616	10	1	165	12
	Birbhum District.					
7	Soori	7,848	2	2	161	4
	Midnapore District.					
8	Midnapore	33,560	198	7	369	209
9	Ghatal	12,638	29	2	135	38
10	Chandrakona	12,257	13	......	120	46
11	Ramjibunpore	10,909	19	1	68	18
	Hughli District.					
12	Hughli . .. .. -	88,718	100	6	461	222
13	Jehanabad	10,507	8	......	96	8
14	Khanacool	7,708	3	1	103	20
15	Shambazar	12,462	9	2	234	18

Districts and Principal Towns of the Bengal Province during the year 1884.

INJURY.					9	10	11								12
SUICIDE.							RATIO OF DEATHS PER 1,000 OF POPULATION.						FROM ALL CAUSES.		
Male.	Female.	Wounds or Accident.	Snake-bite or killed by Wild Beasts.	Total.	All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
28	34	88	132	282	3,301	31,307	1·59	·11	18·74	·30	·21	2·47	23·43	27·86	1
13	9	68	120	210	2,484	17,663	1·10	·01	13·51	·48	·21	2·51	17·85	19·97	2
10	9	55	78	152	3,583	20,451	1·17	·04	19·52	·20	·19	4·55	25·09	25·97	3
10	13	106	464	593	4,815	49,137	1·47	·06	14·02	1·18	·24	1·88	20·08	18·16	4
17	25	83	121	246	895	11,636	·88	·08	15·45	1·59	·41	1·50	19·23	19·00	5
11	12	24	60	97	731	5,703	1·45	·08	12·27	2·17	·31	2·39	18·68	15·50	6
28	37	107	171	343	1,626	17,539	1·07	·07	14·37	1·79	·38	1·80	19·51	17·81	
23	28	99	139	289	1,902	9,445	1·40	·03	8·23	4·01	·54	3·59	17·82	15·32	7
38	45	348	382	813	2,015	27,274	2·58	·04	13·85	·68	·57	1·41	19·14	19·97	8
86	103	223	531	943	5.421	63,073	5·97	·17	29·88	·30	·60	3·47	40·42	39·20	9
81	115	270	316	782	2,076	52,872	3·37	·01	22·39	·11	·40	1·07	27·38	23·28	10
28	43	134	246	451	1,038	30,966	5·05	·04	20·53	·16	·39	·90	27·08	25·05	11
21	46	235	262	564	2,885	26,492	2·65	·01	18·52	·31	·52	2·69	24·73	22·61	12
11	10	251	339	611	861	26,526	·31	·03	16·21	·11	·40	·56	17·66	19·43	13
39	53	167	355	614	583	48,095	4·80	·007	30·67	·07	·48	·44	36·46	20·41	14
6	8	195	217	426	1,658	39,193	·55	·001	17·08	·15	·20	·79	18·80	14·85	15
9	21	98	191	319	1,069	18,128	1·88	·02	20·95	·12	·43	1·46	24·89	19·10	16
23	44	113	211	391	1,200	41,226	3·34	·01	27·42	·29	·30	·94	32·32	15·43	17
10	...	22	2	34	209	1,848	·17	...	8·44	2·21	·22	1·41	12·47	6·64	18
6	2	38	57	103	300	11,169	·34	...	18·25	·16	·17	·52	19·46	14·35	19
42	76	165	129	412	7,782	46,022	3·88	·14	13·54	1·41	·20	3·84	23·03	16·45	20
19	52	181	186	438	1,845	30,818	5·34	·04	11·76	·46	·27	1·13	19·02	11·50	21
20	54	736	167	977	12,590	52,590	4·62	·09	15·50	·45	·51	6·66	27·85	18·11	22
27	38	220	169	454	4,443	38,110	2·06	·05	8·59	·34	·15	1·47	12·68	7·24	23
4	11	450	52	517	2,881	16,576	1·03	·0009	10·34	·48	·46	2·59	14·93	17·10	24
3	2	347	62	414	2,510	18,046	1·65	·70	15·84	·32	·50	3·07	22·12	17·37	25
17	16	401	67	401	3,087	24,562	2·02	·13	10·81	·52	·32	2·67	16·50	11·01	26
26	68	406	251	751	6,917	39,023	2·16	·90	16·33	2·41	·52	4·81	27·15	24·86	27
25	98	655	285	1,063	4,389	53,013	·81	1·34	20·89	·27	·52	2·15	26·00	16·53	28
24	46	439	144	653	3,732	31,555	·84	·17	13·10	·27	·34	1·97	16·73	14·39	29
7	13	736	770	1,526	5,017	30,110	·11	·07	8·66	·59	·61	2·01	12·08	14·16	30
5	7	341	525	878	1,794	27,210	·25	·08	8·40	·81	·34	·69	10·59	12·29	31
23	36	503	337	899	10,717	47,989	·54	1·25	8·97	1·65	·40	8·95	21·79	13·05	32
3	24	387	378	792	6,444	31,210	·37	1·00	12·52	·18	·46	3·78	18·35	11·91	33
15	33	382	482	912	1,052	29,461	·61	·39	13·41	·15	·48	·65	15·61	12·36	34
10	7	342	323	682	4,148	39,773	·69	·30	16·31	·08	·85	2·17	20·83	14·98	35
6	12	135	194	347	759	31,000	·22	·02	15·96	·09	·18	·41	16·90	17·80	36
2	8	23	144	177	380	12.727	1·55	·01	15·83	·02	·25	·54	18·23	18·16	37
12	4	72	147	235	1,489	24,171	1·71	·15	12·26	·25	·15	·95	15·49	10·78	38
65	97	401	313	876	8,661	37,284	4·19	·56	9·06	2·25	·50	5·02	21·61	18·55	39
19	50	213	122	404	10,953	19,394	3·23	·27	2·79	3·00	·46	12·68	22·45	19·08	40
25	51	171	141	388	5,543	25,858	7·68	·22	8·46	5·19	·41	5·99	27·98	21·60	41
21	42	295	124	482	1,403	22,959	1·16	·74	16·48	·94	·44	1·28	21·07	13·50	42
15	10	203	201	429	3,021	23,806	·12	·09	11·35	1·22	·27	1·89	14·96	17·58	43
38	24	29	144	235	1,235	8,774	·19	·03	11·15	1·72	·42	2·22	15·77	14·04	44
7	3	113	94	217	2,314	16,082	1·75	·02	10·08	1·03	·20	2·20	15·31	11·87	45
950	1,502	10,903	10,154	23,569	161,821	1,311,167	1·96	·24	14·66	·79	·36	2·54	20·58	16·82	
1	...	14	8	23	227	1,312	1·55	·38	25·49	3·72	·07	6·66	38·49	41·08	1
...	1	5	4	10	35	267	3·21	...	15·22	1·92	·91	3·21	24·49	30·73	2
...	...	9	1	10	19	312	6·49	1·82	0·88	6·67	·91	1·73	28·52	34·06	3
...	...	1	1	2	200	574	3·73	...	13·54	2·56	·10	10·66	30·61	30·42	4
...	...	1	2	3	163	528	·28	...	16·11	·65	·14	7·65	24·80	37·44	5
1	...	1	2	4	76	268	·79	·07	13·07	·95	·31	6·02	21·24	31·26	6
...	...	1	.....	1	47	217	·25	·25	20·51	·50	·12	5·98	27·67	33·05	7
1	...	8	9	13	252	1,048	5·80	·20	10·99	6·22	·38	7·60	31·22	32·47	8
...	...	1	1	2	31	237	2·29	·15	10·68	3·00	·15	2·45	18·75	24·02	9
...	...	7	2	9	41	229	1·06	...	9·79	3·75	·73	3·34	18·68	30·98	10
...	...	......	2	2	14	122	1·79	·09	6·23	1·65	·18	1·28	11·18	26·89	11
1	2	13	5	21	200	1,100	2·58	·15	11·90	5·73	·54	7·71	28·64	25·67	12
...	...	1	......	1	9	122	·76	...	9·13	·76	·09	·85	11·61	18·08	13
...	1	......	1	2	17	146	·38	·12	13·36	2·58	·25	2·20	18·94	17·56	14
1	1	1	......	3	7	273	·72	·16	18·77	1·44	·24	·56	1·90	31·41	15

ANNUAL FORM NO. VI.—*Deaths registered from* DIFFERENT CAUSES *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	TOWNS—*continued.*					
	Hughli District—continued.					
16	Serampore	26,496	220	16	323	153
17	Boidabatti	14,718	38	6	71	31
18	Utterpara	5,510	36	......	28	19
	Howrah District.					
19	Howrah	90,813	707	25	841	379
20	Balli	14,815	70	......	130	41
	24-Pergunnahs.					
21	Suburbs of Calcutta	251,439	2,421	249	3,897	1,590
22	South Suburban	51,658	99	9	602	113
23	Baranagore	29,982	187	18	303	150
24	Rajpore	10,576	29	......	137	1
25	Augurpara	22,739	52	......	351	35
26	Nawabgunge	18,018	60	1	258	79
27	Naihatti	21,533	133	......	484	53
28	Bussirhat	20,150	29	......	471	11
29	Baduria	19,135	6	......	254	2
	Nuddea District.					
30	Kishnaghur	27,477	64	2	594	40
31	Ranaghat	8,683	6	......	186	9
32	Santipore	29,687	58	3	505	3
33	Kushtia	9,717	33	15	122	4
34	Meherpore	5,731	30	3	128	......
35	Nobodip	14,105	74	......	217	12
	Jessore District.					
36	Jessore	8,495	34	......	219	17
	Murshidabad District.					
37	Berhampore	23,605	40	......	335	34
38	Kandi	10,651	2	......	141	8
39	City Murshidabad	39,231	213	9	841	96
40	Jungipore	10,187	89	2	62	19
	Khulna District.					
41	Satkhira	8,738	9	......	156	9
	Dinagepore District.					
42	Dinagepore	12,560	8	1	96	8
	Rajshahye District.					
43	Beauleah	19,791	286	30	247	80
	Rungpore District.					
44	Rungpore	13,320	4	4	251	50
	Bogra District.					
45	Bogra	6,179	23	......	135	20
	Pubna District.					
46	Pubna	15,267	105	1	402	14
47	Serajgunge	21,037	48	......	634	21
	Darjiling District.					
48	Darjiling	7,976	1	......	71	21
	Julpaiguri District.					
49	Julpaiguri	7,947	5	......	140	38
	Dacca District.					
50	Dacca	80,161	231	135	847	275
51	Naraingunge	12,561	71	......	54	54
	Faridpore District.					
52	Faridpore	10,263	63	......	204	12
	Backergunge District.					
53	Barisal	13,186	74	......	156	14
	Mymensing District.					
54	Jamalpore	16,091	75	......	327	13
55	Kishorgunge	12,898	65	......	178	11
56	Tangail	18,124	30	......	167	18
	Chittagong District.					
57	Chittagong	22,130	111	1	268	44
	Noakhalli District.					
58	Sudharam	5,124	22	......	52	5
	Tipperah District.					
59	Comillah	13,506	9	1	157	21
60	Brahmanberiah	17,543	33	......	265	6

Districts and Principal Towns of the Bengal Province during the year 1884—continued.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
Suicide.		Wounds or Accident.	Snake-bite or killed by wild beasts.	Total.	All other Causes.	Total Deaths from all Causes.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	From All Causes.		Number.
Male.	Female.												For the year.	Mean of previous five years.	
2	2	5	3	12	177	901	8·30	·60	12·19	5·77	·15	6·68	34·00	30·75	16
1	...	......	......	1	55	202	2·58	·40	4·82	2·10	·06	3·74	13·72	22·65	17
...	1	....	......	1	46	130	6·53	...	5·08	3·44	·18	8·54	23·59	29·50	18
7	8	39	7	61	584	2,597	7·78	·27	9·26	4·17	·67	6·43	28·59	28·67	19
...	1	1	1	3	71	315	4·72	...	8·77	2·76	·20	4·79	21·13	.....	20
4	6	68	7	85	3,147	11,389	9·62	·99	15·49	6·32	·33	12·51	45·29	47·43	21
3	2	23	5	33	98	954	1·91	·17	11·65	2·18	·63	1·89	18·46	16·89	22
1	3	16	.....	20	102	780	6·23	·60	10·10	5·00	·66	8·40	26·01	23·68	23
1	...	5	.....	6	16	189	2·74	...	12·95	·09	·56	1·51	17·87	19·27	24
2	...	5	......	7	27	472	2·28	..	15·43	1·53	·30	1·18	20·75	24·82	25
2	...	3	3	8	37	411	3·33	·05	14·20	4·38	·44	2·05	24·47	21·11	26
2	..	10	4	16	59	745	6·17	...	22·47	2·46	·74	2·73	31·59	27·29	27
3	1	4	2	10	48	569	1·41	...	23·03	·53	·48	2·34	27·82	19·19	28
...	1	1	3	5	22	259	·31	...	13·27	·10	·26	1·14	15·10	17·02	29
5	1	6	4	16	208	924	2·32	·07	21·61	1·45	·58	7·56	33·62	47·12	30
...	...	6	2	8	13	222	·69	.	21·42	1·03	·92	1·49	25·56	35·74	31
3	3	4	6	16	57	643	1·98	·10	17·01	·10	·53	1·92	21·65	35·08	32
...	...	5	2	7	9	190	3·39	1·54	12·55	·41	·72	·94	19·55	13·94	33
...	...	....	....	......	14	175	5·23	·52	22·33		...	2·14	30·53	17·15	34
1	...	3	3	7	43	353	5·24	...	15·38	·85	·19	3·04	25·02	20·91	35
1	...	6	2	9	14	293	4·00	..	25·77	2·00	1·05	1·64	34·49	33·29	36
1	2	8	2	13	38	469	2·07	...	14·19	1·44	·55	1·60	19·86	21·92	37
1	...	5	....	6	8	165	·18	...	13·22	·75	·56	·75	15·47	29·79	38
...	4	21	9	34	88	1,281	5·42	·22	21·43	2·44	·86	2·24	32·65	36·47	39
...	...	1	....	1	46	219	8·73	·19	6·08	1·86	·09	4·51	21·49	31·19	40
...	1	1	3	5	18	107	1·02	...	17·85	1·02	·57	2·05	22·54	25·23	41
3	...	14	1	18	40	171	·63	·07	7·64	·63	1·43	3·18	13·61	22·80	42
1	1	4	3	9	98	759	14·45	1·97	12·47	4·04	·45	4·95	38·35	32·37	43
1	...	2	1	4	62	375	·30	30	18·84	3·75	·30	4·65	28·15	26·48	44
...	...	2	3	5	30	213	3·72	...	21·84	3·23	·80	4·85	34·47	34·60	45
1	1	4	4	10	47	579	6·87	·06	26·33	·91	·65	3·07	37·92	22·07	46
2	...	4	4	10	28	741	2·28	...	30·13	·99	·47	1·33	35·22	15·46	47
...	...	3	......	3	56	152	·12	...	8·90	2·63	·37	7·02	19·05	17·52	48
...	...	5	....	5	34	222	·62	...	17·61	4·78	·62	4·27	27·93	32·71	49
5	1	6	2	14	1,068	2,508	2·88	1·67	10·56	3·43	·17	13·29	32·03	24·06	50
...	...	2	......	2	86	267	5·65	...	4·29	4·20	·15	6·84	21·25	21·08	51
1	...	4	1	6	31	316	6·13	...	19·87	1·16	·58	3·02	30·79	29·32	52
3	...	8	4	15	67	326	5·61	...	11·83	1·08	1·13	5·08	24·72	30·00	53
2	...	2	......	4	86	505	4·66	...	20·32	·80	·24	5·34	31·38	26·07	54
...	...	2	......	2	114	370	5·03	...	13·80	·85	·15	8·83	28·68	27·95	55
...	1	2	4	7	16	238	1·65	..	9·21	·90	·38	·88	13·13	11·78	56
...	...	17	......	17	67	508	5·01	·04	12·11	1·98	·76	3·02	22·95	21·40	57
1	...	2	......	3	14	96	4·29	...	10·14	·07	·58	2·73	18·73	15·57	58
...	1	1	......	2	45	235	·66	·07	11·62	1·55	·14	3·33	17·39	22·27	59
...	...	1	......	1	88	393	1·88	...	15·10	·34	·05	5·01	2·40	23·25	60

ANNUAL FORM No. VI.—*Deaths registered from* DIFFERENT CAUSES *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	TOWNS—*concluded.*					
	Patna District.					
61	Patna	160,237	76	413	675	334
62	Behar	48,971	241	22	752	50
63	Dinapore	52,225	55	23	315	77
64	Barrh	23,610	16	1	289	119
65	Mokameh	13,722	32	3	191	42
66	Futwa	21,074	27	10	183	23
	Gya District.					
67	Gya	76,121	360	526	1,506	349
68	Daudnagur	9,870	......	19	112	6
	Shahabad District.					
69	Arrah	43,465	100	43	282	48
70	Dumraon	17,835	13	16	178	22
71	Buxar	17,668	64	1	152	25
	Mozufferpore District.					
72	Mozufferpore	42,742	17	30	546	169
73	Sitamurhi	6,125	......	2	63	10
74	Hajeepore	25,695	6	21	284	64
75	Lalgunge	16,783	......	8	229	4
	Durbhanga District.					
76	Durbhanga	66,096	114	82	661	428
	Sarun District.					
77	Chupra	53,249	90	95	509	227
78	Sewan	13,307	33	41	92	49
79	Revilgunge	12,493	14	5	206	109
	Champarun District.					
80	Bettiah	21,263	3	23	01	18
	Monghyr District.					
81	Monghyr	67,520	156	20	571	288
82	Jamalpore	13,563	68	2	233	50
83	Shaikpura	12,517	3	9	326	2
	Bhagulpore District.					
84	Bhagulpore	57,453	269	520	973	424
	Purneah District.					
85	Purneah	15,016	2	......	430	33
	Maldah District.					
86	English Bazar	12,430	75	1	201	6
	Sonthal Pergunnahs District.					
87	Deoghur	8,005	46	15	82	8
	Cuttack District.					
88	Cuttack	43,239	162	4	163	111
89	Kendrapara	15,697	44	7	121	31
90	Jajipur	11,283	42	1	43	9
	Poori District.					
91	Poori	24,784	335	6	201	80
	Balasore District.					
92	Balasore	20,265	261	1	114	129
	Hazaribagh District.					
93	Hazaribagh	15,306	16	126	230	44
	Lohardugga District.					
94	Ranchi	18,443	......	......	184	17
	Singbhum District.					
95	Chyebassa	6,006	1	......	101	16
	Manbhum District.					
96	Purulia	9,304	11	......	140	38
	TOTAL FOR TOWNS ...	2,458,360	9,390	2,711	31,701	7,984
	TOTAL FOR THE PROVINCE ...	66,163,884	184,421	18,533	966,233	58,376

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24*th April* 1885.

8					9	10	11								12
INJURY.						TOTAL DEATHS FROM ALL CAUSES.	RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.													FROM ALL CAUSES.		
Male.	Female.	Wounds or Accident.	Snake-bite or killed by Wild Beasts.	Total.	All other Causes.		Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
1	1	18	3	21	422	1,943	·47	2·67	4·21	2·08	·14	2·63	12·12	33·56	61
...	5	13	7	28	453	1,546	4·92	·44	16·35	1·02	·57	9·25	31·56	29·70	62
1	...	7	1	9	71	550	1·05	·44	6·03	1·45	·17	1·35	10·53	10·86	63
...	...	10	......	10	135	570	·67	·04	12·24	5·04	·42	5·71	24·14	15·48	64
1	...	......	......	1	69	338	2·33	·21	13·91	3·06	·07	5·02	24·63	29·73	65
...	...	3	......	3	53	299	1·28	·47	8·68	1·09	·14	2·51	14·18	17·31	66
1	3	54	5	63	932	3,736	4·72	6·91	19·78	4·58	·82	12·24	49·07	45·98	67
...	1	4	1	6	45	188	...	1·92	11·34	·60	·60	4·55	19·04	34·38	68
2	...	19	4	25	266	764	·30	·98	6·48	1·10	·57	6·11	17·57	22·96	69
...	...	3	1	4	24	252	·72	·89	9·70	1·23	·22	1·34	14·12	22·19	70
...	1	4	......	5	19	266	3·62	·05	8·60	1·41	·28	1·07	15·05	25·10	71
...	...	18	26	44	213	1,019	·39	·70	12·77	3·95	1·02	4·98	23·84	22·81	72
...	...	......	2	2	45	122	...	·32	10·28	5·63	·32	7·34	19·91	29·28	73
...	1	7	5	13	113	501	·23	·81	11·05	2·19	·50	4·39	19·49	14·38	74
...	...	2	3	5	55	301	...	·47	13·64	·23	·29	3·27	17·93	17·58	75
1	1	17	5	24	277	1,586	1·72	1·24	10·00	6·47	·36	4·19	23·99	21·99	76
1	1	19	5	26	200	1,237	1·69	1·78	11·24	4·26	·48	3·75	23·23	22·85	77
...	...	4	1	5	162	382	2·47	3·07	5·91	3·68	·37	12·17	28·70	15·76	78
1	2	2	3	8	21	363	1·12	·40	16·48	8·72	·64	1·68	29·05	32·62	79
...	...	2	2	4	84	433	·14	1·08	14·15	·84	·18	3·95	20·36	24·49	80
...	1	26	8	35	228	1,298	2·71	·34	9·92	5·00	·60	3·96	22·56	26·62	81
...	..	6	3	9	84	446	5·01	·14	17·17	3·68	·66	6·19	32·88	35·72	82
...	...	......	3	3	26	368	·23	·71	26·04	·15	·23	1·99	29·40	30·19	83
2	1	26	6	35	604	2,825	4·68	9·05	16·93	7·37	·60	10·51	49·17	32·32	84
...	1	3	1	5	50	520	·13	...	28·63	2·19	·33	3·32	34·62	41·85	85
...	...	2	2	4	30	317	6·11	·08	16·17	·48	·32	2·41	25·50	27·01	86
...	...	1	......	1	20	172	5·74	1·87	10·24	·89	·12	2·49	21·48	20·51	87
3	1	11	......	15	331	786	3·74	·09	3·76	2·56	·34	7·65	18·17	1·01	88
1	2	2	4	9	167	399	2·80	1·72	7·70	1·97	·57	10·63	25·10	229·34	89
...	...	3	2	5	77	177	3·73	·08	3·82	·80	·44	6·85	15·75	30·19	90
3	2	13	2	20	461	1,122	13·51	·24	8·11	3·99	·80	18·60	45·27	62·04	91
1	...	2	......	3	149	657	12·87	·04	5·62	6·36	·14	7·35	32·42	31·19	92
1	...	4	......	5	53	474	1·04	8·23	15·02	2·87	·32	3·46	30·96	23·08	93
1	...	3	......	4	22	227	...	...	9·97	·92	·21	1·19	12·30	23,48	94
1	...	3	......	4	......	122	·16	...	16·81	2·66	·66	......	20·31	37·09	95
...	...	6	1	7	35	235	1·18	...	16·01	3·54	·75	3·76	25·25	27·68	96
90	70	706	239	1,105	14,552	67,443	3·81	1·10	12·89	3·24	·44	5·91	27·43	29·44	
1,040	1,572	11,669	10,393	24,674	176,373	1,378,610	2·03	·28	14·60	·88	·37	2·06	20·83	17·30	

R. LIDDERDALE M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. VII.—*Deaths registered from* CHOLERA *in the*

	2	3		4							
Number.	Districts.	Circles of Registration.		Villages.							
		Number in each district.	Number from which deaths from Cholera were reported.	Number in each district.	Number from which deaths from Cholera were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan ...	20	19	3,667	341	46	28	323	1,003	421	142
2	Bankura ...	13	13	5,417	224	89	79	161	284	355	105
3	Birbhum ...	8	8	3,247	218	....	16	37	224	277	61
4	Midnapore ...	29	29	14,306	1,024	371	456	489	715	676	304
5	Hughli ...	12	12	1,523	181	34	21	142	222	92	9
6	Serampore ...	8	8	926	142	19	55	90	207	45	15
	Total of Hughli, including Serampore ...	20	20	2,449	323	53	76	232	429	137	24
7	Howrah ...	8	8	1,496	276	83	127	327	448	229	40
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	......	.....	489	600	677	626	238	63
	Suburbs of Calcutta ...	1	1	......	...	72	170	465	811	301	153
	Total of 24-Pergunnahs ...	32	32	5,392	1,016	561	770	1,142	1,437	539	216
9	Nuddea ...	31	31	2,964	1,207	397	232	1,419	5,153	1,402	126
10	Jessore ...	22	22	4,895	988	415	228	712	2,330	587	134
11	Murshidabad ...	27	27	3,717	841	4	18	905	3,188	1,125	71
12	Khulna ...	14	14	2,890	822	145	45	211	516	481	82
	Rajshahye Division.										
13	Dinagepore ...	18	18	6,921	146	7	42	14	22	69	31
14	Rajshahye ...	14	14	5,167	899	163	24	260	3,023	1,822	142
15	Rungpore ...	17	16	6,737	194	36	6	19	95	189	184
16	Bogra ...	10	10	4,111	334	1	2	6	64	51	15
17	Pubna ...	10	10	3,969	632	40	16	637	1,416	884	14
18	Darjiling ...	5	4	963	11	....	......	1	1	......	8
19	Julpigori ...	9	9	1,038	27	.....	....	.....	7	66	28
	Dacca Division.										
20	Dacca ...	14	14	5,788	1,531	506	290	738	2,003	625	52
21	Faridpore ...	14	14	4,655	1,575	372	191	636	2,144	601	163
22	Backergunge ...	17	17	4,356	1,494	640	252	1,042	1,763	1,882	319
23	Mymensing ...	18	18	10,088	1,343	38	22	152	1,056	1,113	449
	Chittagong Division.										
24	Chittagong ...	14	13	1,390	209	...	2	1	26	144	147
25	Noakhali ...	10	10	2,471	334	23	9	21	48	24	3
26	Tipperah ...	13	13	6,451	753	143	196	211	279	184	28
	Patna Division.										
27	Patna ...	19	19	5,974	689	......	......	16	193	365	640
28	Gya ...	14	13	6,531	290	8	4	60	155	49	120
29	Shahabad ...	14	14	5,378	244	......	.....	2	121	299	340
30	Mozufferpore ...	13	10	5,154	47	.....	......	.....	36	82	43
31	Durbhunga ...	11	11	6,359	102	......	......	......	10	127	120
32	Sarun ...	13	13	4,578	217	1	....	3	3	35	71
33	Chumparun ...	10	7	7,766	7	....	......	......	2	1	8
	Bhagulpore Division.										
34	Monghyr ...	14	13	4,277	343	1	1	......	25	118	256
35	Bhagulpore ...	13	12	3,219	351	1	1	27	90	412	395
36	Purneah ...	14	10	3,651	56	.....	2	1	92	78	89
37	Maldah ...	10	10	3,071	236	....	10	40	145	545	107
38	Sonthal Pergunnahs ...	6	6	11,254	597	1	34	139	200	786	423
	Orissa Division.										
39	Cuttack ...	13	13	8,747	1,090	175	89	164	328	437	747
40	Poori ...	6	6	6,166	708	3	49	30	82	30	279
41	Balasore ...	10	10	6,393	1,538	280	580	284	874	1,953	2,261
	Chota Nagpore Division.										
42	Hazaribagh ...	17	14	7,702	177	......	......	36	110	124	134
43	Lohardugga ...	22	4	8,511	16	.....	......	......	......	20	2
44	Singhbhum ...	6	4	3,023	23	......	18	4	39	19	9
45	Manbhum ...	17	16	6,176	355	......	16	26	477	691	452
	Total for the Province ...	649	608	227,615	24,621	4,633	3,731	10,507	30,785	20,124	9,384

Office of the Sany. Commr. for Bengal,
The 24th April 1885.

Districts of the Bengal Province during each month of the year 1884.

5						6			7			8	9
						Total.			Ratio of Deaths per 1,000 of Population.			Mean ratio per 1,000 during previous five years.	Number.
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.		
41	130	46	6	26	73	1,258	1,027	2,285	1·88	1·41	1·64	1·55	1
45	3	1	20	21	14	621	556	1,177	1·22	1·04	1·12	·86	2
71	33	15	7	168	257	578	588	1,166	1·51	1·12	1·40	1·37	3
222	50	9	26	195	433	2,152	1,724	3,876	1·74	1·36	1·54	1·28	4
6	8	6	11	54	38	391	252	643	1·23	·72	·96	·80	5
27	33	13	10	133	90	506	231	737	2·90	1·30	2·09	1·58	6
33	41	19	21	187	128	897	483	1,380	1·83	·92	1·35	1·07	
18	15	8	26	53	145	973	546	1,519	3·07	1·71	2·39	2·20	7
62	35	16	30	271	1,165	2,430	1,842	4,272	2·93	2·33	2·63	1·83	8
66	41	38	50	127	127	1,648	773	2,421	11·19	7·41	9·62	7·54	
128	76	54	80	398	1,292	4,078	2,615	6,693	4·18	2·92	3·57	2·59	
24	16	15	52	339	296	5,310	4,281	9,591	6·58	5·03	5·79	3·52	9
58	35	5	72	966	988	3,574	2,995	6,569	3·72	3·05	3·38	2·83	10
3	1	......	63	413	334	3,473	2,655	6,128	5·92	4·11	4·99	1·46	11
37	22	8	44	468	802	1,592	1,259	2,851	2·80	2·46	2·64	2·31	12
40	2	......	25	78	131	274	207	481	·35	·28	·31	·41	13
68	8	......	125	655	338	3,655	2,973	6,628	5·56	4·38	4·95	1·40	14
47	7	22	22	331	205	646	517	1,163	·60	·50	·55	·92	15
21	54	66	465	579	74	751	647	1,398	2·01	1·78	1·90	·87	16
3	......	20	636	689	59	2,324	2,090	4,414	3·58	3·15	3·36	1·58	17
2	10	5	......	......	......	21	6	27	·23	·08	·17	·53	18
24	31	17	27	15	......	114	91	205	·37	·32	·35	·96	19
30	48	132	409	1,964	1,373	4,341	3,824	8,165	4·19	3·53	3·87	1·62	20
11	17	43	592	2,132	1,733	4,776	3,949	8,725	5·92	4·78	5·34	1·73	21
165	63	17	42	1,014	1,611	4,715	4,095	8,810	4·84	4·41	4·63	2·10	22
43	19	22	237	1,603	1,620	3,438	2,936	6,374	2·21	1·95	2·08	·90	23
120	35	39	7	182	561	638	626	1,264	1·20	1·04	1·09	1·26	24
28	356	215	45	228	874	759	615	1,374	1·82	1·51	1·67	·25	25
18	14	80	235	559	1,104	1,612	1,430	3,051	2·09	1·92	2·00	1·14	26
656	1,337	238	87	14	7	1,919	1,634	3,553	2·29	1·81	2·02	1·63	27
496	641	334	113	39	3	1,137	885	2,022	1·08	·81	·95	2·41	28
240	533	106	71	50	4	925	850	1,775	·96	·83	·90	5·03	29
36	49	29	6	31	5	170	147	317	·13	·11	·12	2·71	30
79	65	87	81	140	47	425	331	756	·32	·24	·28	1·47	31
94	513	418	116	76	8	727	611	1,338	·67	·51	·59	·94	32
24	416	134	55	9	......	353	296	649	·40	·34	·37	2·17	33
337	366	137	120	19	1	770	611	1,381	·79	·61	·70	1·48	34
281	196	84	92	19	6	901	703	1,604	·92	·71	·81	1·12	35
6	......	10	36	62	41	211	206	417	·22	·22	·22	1·48	36
20	9	......	12	41	229	640	518	1,158	1·84	1·42	1·62	1·56	37
423	471	67	42	17	23	1,576	1,140	2,716	2·00	1·45	1·75	·59	38
991	605	862	1,054	1,391	639	3,641	3,841	7,482	4·14	4·18	4·16	2·53	39
776	181	280	309	670	430	1,642	1,486	3,128	3·67	3·36	3·52	2·72	40
1,007	34	16	26	146	112	3,830	3,543	7,373	8·20	7·32	7·79	1·23	41
242	537	90	13	......	......	704	582	1,286	1·29	1·03	1·16	·46	42
44	101	24	......	......	......	96	95	191	·12	·11	·11	·81	43
8	......	......	5	10	......	63	49	112	·22	·17	·19	·66	44
124	41	6	8	6	2	1,034	815	1,849	1·96	1·52	1·74	·92	45
7,193	7,179	3,780	5,530	16,093	15,522	73,334	61,087	134,421	2·23	1·83	2·03	1·59	

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM NO. VIII.—*Deaths registered from* SMALL-POX *in the*

1	2	3		4						
		CIRCLES OF REGISTRATION.		VILLAGES.						
Number.	DISTRICTS.	Number in each district.	Number from which deaths from small-pox were reported.	Number in each district.	Number from which deaths from small-pox were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan	20	15	3,667	60	10	10	15	21	36
2	Bankura	13	6	5,417	9	......	2	2	4	7
3	Birbhum	8	5	3,247	12	3	2	3	2	8
4	Midnapore	29	17	14,308	98	22	17	16	18	11
5	Hughli	12	10	1,523	28	2	4	14	7	16
6	Serampore	8	6	926	29	4	1	5	13	12
	Total of Hughli, including Serampore	20	16	2,449	57	6	5	19	20	28
7	Howrah	8	6	1,496	24	3	2	6	6	11
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	15	......	......	3	4	24	10	11
	Suburbs of Calcutta	1	1	......	......	15	57	45	47	34
	Total of 24-Pergunnahs	32	16	5,592	43	18	61	69	57	45
9	Nuddea	31	20	2,964	80	27	29	76	67	34
10	Jessore	22	9	4,895	8	1	......	2	4	4
11	Murshidabad	27	11	3,717	40	6	8	18	18	2
12	Khulna	14	4	2,890	7	......	......	......	1	6
	Rajshahye Division.									
13	Dinagepore	18	11	6,921	28	1	1	......	3	7
14	Rajshahye	14	5	5,167	13	......	2	1	6	6
15	Rungpore	17	5	6,737	8	......	1	4	......	2
16	Bogra	10	5	4,141	9	......	......	4	2	1
17	Pubna	10	5	3,969	9	4	2	4	4	1
18	Darjiling	5	......	943	......	......	......	......	......	......
19	Jalpaiguri	9	......	1,038	......	......	......	......	......	......
	Dacca Division.									
20	Dacca	14	12	5,738	121	32	36	39	49	61
21	Faridpore	14	5	4,665	19	28	19	8	5	3
22	Backergunge	17	15	4,336	132	43	27	26	28	13
23	Mymensing	18	12	10,088	79	28	38	23	25	8
	Chittagong Division.									
24	Chittagong	14	2	1,390	2	......	......	......	......	1
25	Noakhalli	10	7	2,471	140	105	140	102	64	85
26	Tipperah	13	10	6,451	118	15	24	14	32	14
	Patna Division.									
27	Patna	10	10	5,974	638	40	101	276	463	378
28	Gya	14	14	6,531	1,033	99	223	552	715	685
29	Shahabad	14	14	5,378	248	1	6	24	49	84
30	Mozufferpore	13	13	5,154	119	6	20	38	54	59
31	Durbhunga	11	11	6,350	91	5	46	63	80	70
32	Sarun	13	13	4,578	747	36	92	384	728	778
33	Chumparun	10	10	7,766	524	38	30	85	206	424
	Bhagulpore Division.									
34	Monghyr	14	14	4,277	383	7	35	119	247	166
35	Bhagulpore	13	13	3,219	352	19	46	101	302	325
36	Purneah	14	6	3,651	16	......	......	1	3	2
37	Maldah	10	5	3,071	11	......	......	2	4	1
38	Sonthal Pergunnahs	6	6	11,254	139	33	31	29	48	24
	Orissa Division.									
39	Cuttack	13	13	8,747	576	38	167	319	193	112
40	Poori	6	6	5,166	122	63	24	25	12	19
41	Balasore	10	8	6,393	152	22	64	65	23	11
	Chota Nagpore Division.									
42	Hazaribagh	17	17	7,702	310	53	98	98	18	149
43	Lohardugga	22	11	8,511	99	1	2	5	16	18
44	Singbhum	6	4	3,023	5	4	......	......	3	5
45	Manbhum	17	8	6,176	68	......	......	......	3	
	TOTAL FOR THE PROVINCE	649	424	227,615	6,749	826	1,411	2,637	3,716	3,705

OFFICE OF THE SANY. COMMR. FOR BENGAL,

The 24th April 1885.

Districts of the Bengal Province during each month of the year 1884.

5							6			7		8			9	
							TOTAL.			NUMBER OF THESE DEATHS AMONG CHILDREN.		TOTAL RATIO PER 1,000 OF POPULATION.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Under one year.	Under 12 years.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
25	7	6	5	12	18	12	91	95	186	25	93	·13	·13	·13	·11	1
3	1	1	......	......	......	......	14	6	20	4	5	·02	·01	·01	·11	2
8	5	2	......	......	2	1	19	17	36	6	16	·04	·04	·04	·01	3
13	17	15	14	12	10	12	93	84	177	12	53	·07	·06	·07	·54	4
6	3	3	1	1	1	......	39	19	58	1	10	·12	·05	·08	·06	5
2	2	2	1	2	......	......	34	10	44	1	6	·19	·05	·12	·05	6
8	5	5	2	3	1	..	73	29	102	2	16	·14	·05	·10	·05	
2	3	3	4	2	2	2	29	17	46	2	16	·09	·05	07	·09	7
12	7	6	2	8	5	1	56	37	93	7	49	·08	·04	·05	·07	8
23	11	5	3	1	4	4	153	96	249	23	87	1·03	·93	·99	·82	8
35	18	11	5	9	9	5	209	133	342	30	136	·21	·14	·18	·17	8
18	8	10	8	5	7	8	164	133	297	48	215	·20	·15	·17	·12	9
4	4	1	......	......	......	......	13	7	20	1	12	·01	·007	·01	·02	10
......	2	3	1	......	1	......	31	28	59	4	17	·05	·04	·04	·11	11
4	......	2	......	......	......	......	6	7	13	1	2	·01	·01	·01	·005	12
20	7	11	......	5	......	1	42	14	56	2	16	·05	·01	·03	·03	13
8	4	4	1	1	6	10	26	23	49	4	19	·03	·03	·03	·01	14
1	......	......	......	......	......	......	5	3	8	......	1	·004	·002	·003	·33	15
2	1	......	......	2	3	1	13	3	16	......	3	·03	·008	·02	·002	16
4	......	......	......	......	......	......	12	7	19	......	2	·01	·01	·01	·01	17
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	·18	18
......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	·21	19
63	28	26	12	32	23	22	234	189	423	68	272	·22	·17	·19	·05	20
7	1	......	......	......	1	......	42	30	72	......	......	·05	·03	·04	·17	21
5	6	7	4	4	6	15	99	84	183	16	72	·10	·09	·09	·24	22
9	3	4	5	9	6	2	92	68	160	12	64	·05	·04	·05	·15	23
......	......	......	......	......	1	......	2	......	2	......	1	·003	......	·001	·40	24
17	5	11	10	8	9	19	340	235	575	88	234	·81	·58	·70	·82	25
10	8	4	12	5	21	40	128	71	199	16	62	·16	·09	·13	·23	26
224	113	53	16	11	45	53	946	827	1,773	271	1,260	1·10	·92	1·00	·36	27
448	265	119	60	20	33	70	1,692	1,597	3,289	1,101	3,235	1·62	1·47	1·54	·32	28
57	25	17	18	17	31	67	217	179	396	110	392	·22	·17	·20	·25	29
51	10	4	6	5	......	3	145	111	256	44	194	·11	·08	·09	·14	30
20	14	3	......	......	3	5	170	139	309	48	167	·13	·10	·11	·18	31
463	226	91	37	24	25	28	1,530	1,382	2,912	590	1,670	1·41	1·15	1·27	·15	32
443	224	128	41	31	24	59	936	797	1,733	524	1,516	1·07	·93	1·00	·41	33
107	46	20	9	5	9	7	400	377	777	221	720	·41	·37	·39	·30	34
156	73	34	6	18	10	19	569	540	1,109	299	998	·59	·54	·56	·34	35
3	3	9	......	1	6	11	21	18	39	5	10	·02	·01	·02	·08	36
1	......	......	4	......	......	......	10	2	12	......	10	·02	·005	·01	·12	37
23	21	18	9	4	5	10	151	104	255	20	98	·19	·13	·16	·06	38
52	52	24	4	17	12	24	527	487	1,014	272	1,014	·60	·54	·56	1·69	39
9	8	7	6	14	23	38	121	125	246	46	163	·27	·28	·27	2·58	40
7	6	1	......	3	3	5	110	100	210	61	125	·23	·20	·22	·07	41
169	61	47	25	67	22	23	488	454	942	148	484	·89	·81	·85	·12	42
32	17	16	12	8	15	10	73	79	152	......	......	·09	·09	·09	·52	43
3	5	......	......	......	......	1	10	11	21	......	3	·03	·03	·03	·15	44
7	11	......	......	......	......	4	16	12	28	2	9	·03	·02	·02	·04	45
2,543	1,312	717	330	354	392	585	9,909	8,624	18,533	4,193	13,395	·30	·25	·28	·28	

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Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. IX.—*Deaths registered from* **FEVERS** *in*

1	2	3		4						
		CIRCLES OF REGISTRATION		VILLAGES.						
Number	DISTRICTS	Number in each district	Number from which deaths from fever were reported	Number in each district	Number from which deaths from fever were reported	January.	February.	March.	April.	May.
	Burdwan Division									
1	Burdwan	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 444	2 112	2 119
2	Bankura	13	13	5 117	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,086
3	Birbhum	[illegible]	[illegible]	[illegible]	2 700	1 501	[illegible]	[illegible]	1 426	[illegible]
4	Midnapore	23	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3 258	[illegible]	[illegible]
5	Hughli	12	12	[illegible]	[illegible]	[illegible]	912	846	851	[illegible]
6	Serampore	8	8	[illegible]	667	[illegible]	[illegible]	403	350	238
	Total of Hughli including Serampore	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1 201	[illegible]
7	Howrah	[illegible]	8	[illegible]	[illegible]	455	375	[illegible]	816	[illegible]
	Presidency Division									
8	24-Pergunnahs excluding Suburbs of Calcutta	31	31	·		[illegible]	[illegible]	[illegible]	[illegible]	1 409
	Suburbs of Calcutta	1	1			373	[illegible]	[illegible]	[illegible]	203
	Total 24-Pergunnahs	[illegible]	[illegible]	[illegible]	4 488	2 461	[illegible]	[illegible]	[illegible]	1 672
9	Nuddea	31	31	[illegible]	[illegible]	[illegible]	3 337	[illegible]	[illegible]	3 354
10	Jessore		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 820
11	Moorshedabad	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	Khulna	[illegible]	14	2 800	[illegible]	1 969	[illegible]	[illegible]	[illegible]	1,283
	Rajshahye Division									
13	Dinagepore	18	18	[illegible]	[illegible]	[illegible]	2 307	[illegible]	[illegible]	1 961
14	Rajshahye	11	14	[illegible]	[illegible]	373	3 010	[illegible]	[illegible]	2 717
15	Rungpore	17	17	[illegible]	[illegible]	4 177	[illegible]	[illegible]	2 800	[illegible]
16	Bogra	10	10	4 141	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
17	Pubna	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 811	[illegible]
18	Darjeeling	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	80
19	Julpigori	9	9	[illegible]	[illegible]	787	751	813	902	953
	Dacca Division									
20	Dacca	14	11	[illegible]	[illegible]	3 309	[illegible]	[illegible]	[illegible]	[illegible]
21	Furreedpore	11	14	[illegible]	2 318	[illegible]	[illegible]	1 387	[illegible]	[illegible]
22	Backergunge	17	17	[illegible]	[illegible]	[illegible]	[illegible]	2 148	2 108	2 398
23	Mymensingh	18	18	10 088	[illegible]	2 813	2,210	[illegible]	1 961	[illegible]
	Chittagong Division									
24	Chittagong	14	11	[illegible]	[illegible]	1 004	909	745	700	942
25	Noakhally	10	10	2 471	[illegible]	1 311	[illegible]	1 107	1 019	972
26	Tipperah	13	13	[illegible]	4,516	[illegible]	[illegible]	1 136	[illegible]	1,171
	Patna Division									
27	Patna	19	[illegible]	[illegible]	4 011	[illegible]	1 203	[illegible]	1 971	1 802
28	Gya	14	14	[illegible]	[illegible]	[illegible]	2 417	[illegible]	[illegible]	3 201
29	Shahabad	14	14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1 710	[illegible]
30	Mozufferpore	13	13	[illegible]	[illegible]	1 816	[illegible]	[illegible]	[illegible]	[illegible]
31	Durbhunga	11	11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1 801	[illegible]
32	Sarun	13	13	[illegible]	[illegible]	[illegible]	919	1 637	[illegible]	[illegible]
33	Chumparun	10	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,455	[illegible]
	Bhagulpore Division									
34	Monghyr	14	14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,785
35	Bhagulpore	13	13	[illegible]	[illegible]	[illegible]	[illegible]	2,132	2 472	2 591
36	Purneah	14	14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2 464	2,209
37	Maldah	10	10	3 071	[illegible]	[illegible]	848	966	1 080	1 015
38	Sonthal Pergunnahs	6	6	[illegible]	[illegible]	1 206	1 120	1,355	1,702	1,616
	Orissa Division									
39	Cuttack	13	15	[illegible]	5 042	1,096	1,200	1,170	1,196	989
40	Pooree	[illegible]	6	[illegible]	[illegible]	307	108	203	180	165
41	Balasore	10	10	6 393	[illegible]	800	610	537	534	420
	Chota Nagpore Division									
42	Hazaribagh	17	17	7 702	[illegible]	1 182	981	1 221	1,568	1,504
43	Lohardugga	23	22	[illegible]	[illegible]	[illegible]	1,244	[illegible]	[illegible]	[illegible]
44	Singbhoom	6	6	[illegible]	[illegible]	[illegible]	520	401	614	[illegible]
45	Manbhum	17	17	6 176	[illegible]	660	615	738	1,137	976
	TOTAL FOR THE PROVINCE	649	649	227 615	147,466	[illegible]	69,883	73,702	76,711	71,070

OFFICE OF THE SANY COMMR FOR BENGAL,

The 24th April 1885.

5							6			7			8	9
							TOTAL.			RATIO OF DEATHS PER 1,000 OF POPULATION.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
1,888	1,621	1,494	1,566	2,472	2,721	2,883	13,912	12,278	26,190	20·81	16·96	18·81	23·77	1
997	930	940	881	1,374	1,413	1,184	7,512	6,616	14,128	14·81	12·37	13·56	16·15	2
1,000	1,029	1,019	1,028	1,283	1,662	1,509	7,846	7,671	15,517	20·56	18·57	19·53	21·07	3
2,302	2,368	2,743	2,532	3,065	3,946	3,911	19,876	17,332	37,208	15·98	13·62	14·79	13·41	4
518	509	581	636	957	1,296	1,345	5,145	4,924	10,069	16·29	14·17	15·18	15·21	5
208	197	226	310	360	507	603	2,166	2,001	4,167	12·12	11·27	11·83	11·29	6
726	706	807	916	1,317	1,803	1,948	7,311	6,925	14,236	14·91	13·19	14·02	13·85	
311	313	328	409	477	626	733	2,915	2,418	5,333	9·21	7·58	8·39	8·64	7
1,145	1,421	1,827	1,668	2,177	2,954	3,055	12,393	10,192	22,585	14·36	12·89	13·95	15·68	8
226	305	289	303	318	491	415	2,068	1,829	3,897	14·04	17·54	15·49	19·55	
1,371	1,726	2,116	1,971	2,495	3,445	3,500	14,461	12,021	26,482	14·82	13·43	14·16	16·18	
2,982	2,814	2,696	3,966	4,573	5,678	5,882	26,716	21,667	48,383	33·15	27·49	29·27	31·72	9
2,178	2,168	2,451	2,629	4,107	6,608	6,281	23,916	19,549	43,465	24·93	19·94	22·41	19·08	10
1,423	1,275	1,199	1,199	2,612	3,249	2,435	13,616	11,231	21,847	23·21	17·54	20·25	22·12	11
1,243	1,252	1,397	1,407	1,845	2,663	2,725	10,490	9,512	20,002	18·45	18·59	18·52	18·09	12
1,589	1,588	1,637	1,468	1,726	2,461	2,929	14,468	9,986	24,454	18·49	13·64	16·14	17·27	13
2,496	2,088	3,212	2,796	3,748	5,975	4,500	22,183	18,515	40,698	33·59	27·29	30·40	24·03	14
2,505	2,376	2,282	2,248	2,636	4,158	3,751	19,881	15,986	35,867	18·63	15·51	17·09	12·45	15
966	1,149	1,244	1,170	1,566	2,004	1,992	8,405	6,992	15,397	22·55	19·33	20·96	16·47	16
1,934	1,632	1,611	1,742	3,568	5,646	4,834	19,291	16,723	36,014	29·75	25·20	27·45	12·89	17
85	93	176	190	184	149	159	816	506	1,322	9·12	7·58	8·46	4·71	18
908	849	693	614	826	958	1,510	6,008	4,606	10,614	19·66	16·68	18·25	12·20	19
1,514	1,555	1,712	1,916	2,674	3,580	3,260	14,966	13,342	28,308	14·47	12·32	13·37	11·17	20
965	877	1,016	1,239	1,883	2,594	2,602	10,556	8,721	19,277	13·09	10·56	11·81	8·44	21
1,936	1,882	1,868	2,081	2,693	3,458	3,711	15,471	13,935	29,406	15·89	15·02	15·46	11·79	22
1,869	1,814	1,660	1,751	2,324	2,889	3,095	14,910	11,587	26,497	9·59	7·73	8·68	5·09	23
1,155	1,028	918	868	870	1,146	1,813	6,359	5,389	11,748	11·96	8·97	10·37	11·41	24
1,087	937	986	946	1,076	1,114	1,374	6,598	6,382	12,980	15·88	15·73	15·81	14·00	25
1,099	1,060	1,193	1,305	1,722	1,905	2,049	8,762	7,758	16,520	11·36	10·36	10·87	8·21	26
2,506	2,437	3,794	2,490	2,084	2,576	1,853	13,540	12,342	25,882	15·76	13·74	14·73	15·13	27
3,269	4,548	6,612	5,444	4,003	3,694	2,924	23,117	21,104	44,221	22·15	19·51	20·81	12·62	28
2,037	2,277	3,381	3,097	2,515	2,266	1,942	13,600	11,719	25,319	14·31	11·51	12·88	10·89	29
1,604	1,654	1,981	2,004	2,161	2,965	2,370	12,490	10,208	22,698	9·86	7·75	8·79	7·79	30
1,642	1,590	1,744	1,664	1,703	2,538	2,034	11,984	10,264	22,248	9·24	7·66	8·44	8·29	31
2,033	2,090	2,548	2,055	1,658	1,405	1,214	11,760	8,888	20,648	10·85	7·42	9·05	5·38	32
1,027	1,567	2,185	1,692	1,929	2,833	2,144	12,071	9,526	21,597	13·86	11·19	12·54	6·74	33
1,970	1,918	2,032	2,825	3,143	3,241	2,739	14,269	12,158	26,427	14·72	12·15	13·41	10·09	34
2,689	2,540	2,987	2,673	2,993	4,019	3,262	16,902	15,215	32,117	17·24	15·41	16·31	11·06	35
1,701	1,873	1,759	1,969	2,346	3,534	3,808	17,156	12,542	29,698	18·30	13·75	16·06	15·83	36
775	627	594	729	1,015	1,204	1,471	6,416	4,841	11,257	18·49	13·51	15·84	15·89	37
1,704	1,667	1,790	1,620	1,901	1,856	1,675	10,908	8,312	19,220	13·88	10·61	12·25	8·92	38
1,056	1,030	1,097	1,176	1,560	1,731	2,003	8,103	7,861	15,964	9·23	8·56	8·89	7·93	39
122	152	138	162	263	372	350	1,275	1,337	2,612	2·85	3·02	2·93	5·57	40
462	534	632	682	824	961	951	3,983	3,964	7,947	8·63	8·17	8·41	6·91	41
1,406	1,514	2,090	2,121	1,820	1,556	1,226	9,584	8,605	18,189	17·58	15·37	16·46	11·40	42
1,229	1,330	1,892	2,303	1,975	1,683	1,346	9,726	8,527	18,253	12·20	10·49	11·34	12·65	43
503	484	555	592	513	504	483	3,405	2,908	6,313	12·11	10·34	11·23	9·72	44
971	983	1,129	928	904	957	737	5,878	4,852	10,730	11·18	9·10	10·13	8·45	45
66,923	65,958	77,188	75,375	88,424	111,836	104,582	523,412	442,821	966,233	15·94	13·28	14·60	12·38	

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Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

ANNUAL FORM No. X.—*Deaths registered from* BOWEL-COMPLAINTS

1	2	3		4							
		CIRCLES OF REGISTRATION		VILLAGES							
Number.	DISTRICTS.	Number in each district.	Number from which deaths from Bowel-complaints were reported.	Number in each district.	Number from which deaths from Bowel-complaints were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division										
1	Burdwan	20	20	[illegible]	[illegible]	[illegible]	48	[illegible]	84	[illegible]	36
2	Bankura	13	[illegible]	[illegible]	272	[illegible]	37	57	56	80	51
3	Birbhum	8	8	[illegible]	108	17	10	21	15	21	10
4	Midnapore	[illegible]	29	[illegible]	2,011	40[illegible]	37[illegible]	[illegible]	301	317	259
5	Hughli	12	12	[illegible]	[illegible]	114	7	103	93	47	60
6	Serampore	8	8	[illegible]	322	83	72	82	45	57	34
	Total of Hughli, including Serampore	20	20	2,443	[illegible]	196	163	191	1[illegible]8	124	94
7	Howrah	8	8	1,196	[illegible]	262	246	256	194	165	175
	Presidency Division										
8	24 Pergunnahs exclusive of Suburbs of Calcutta	31	31			123	114	127	106	89	64
	Suburbs of Calcutta	1	1			184	116	98	104	83	76
	Total of 24 Pergunnahs	32	32	[illegible]	[illegible]	317	230	225	210	172	140
9	Nuddea	31	28	2,984	200	115	72	98	52	62	35
10	Jessore	22	19	[illegible]	[illegible]	18	9	30	38	18	11
11	Murshidabad	27	24	3,717	177	12	15	41	[illegible]	30	9
12	Khulna	14	14	2,830	[illegible]	32	19	18	31	28	14
	Rajshahye Division										
13	Dinagepore	18	17	6,921	172	12	10	12	29	28	24
14	Rajshahye	14	11	5,16[illegible]	63	7	[illegible]	10	13	13	16
15	Rungpore	17	16	6,737	187	31	40	30	44	62	19
16	Bogra	10	9	4,141	73	4		1	6	6	11
17	Pubna	10	10	3,989	[illegible]	19	18	21	[illegible]	67	38
18	Darjeeling	[illegible]	5	943	133	13	4	6	12	17	20
19	Julpigori	9	8	1,038	31	6	9	10	6	8	9
	Dacca Division										
20	Dacca	14	14	5,738	738	378	222	269	301	221	120
21	Faridpore	14	14	[illegible]	397	73	43	99	63	74	54
22	Backergunge	17	17	4,336	537	70	57	85	72	105	57
23	Mymensing	18	18	10,088	594	66	59	54	91	102	113
	Chittagong Division										
24	Chittagong	14	14	1,390	253	30	24	14	22	75	68
25	Noakhally	10	10	2,471	198	14	11	15	26	21	20
26	Tipperah	13	12	6,451	384	47	54	74	69	67	37
	Patna Division										
27	Patna	19	19	5,974	1,129	175	183	219	384	320	349
28	Gya	14	14	6,531	309	38	45	51	76	65	73
29	Shahabad	14	14	5,378	462	44	27	41	54	69	53
30	Mozufferpore	13	13	5,154	784	95	94	114	147	127	146
31	Durbhunga	11	11	6,359	529	200	168	197	203	231	195
32	Sarun	13	13	4,578	1,257	240	228	398	414	514	341
33	Chumparun	20	10	7,706	163	18	20	19	31	25	39
	Bhagulpore Division										
34	Monghyr	14	14	4,277	210	34	23	45	65	49	58
35	Bhagulpore	13	13	3,219	880	231	203	197	210	249	229
36	Purneah	14	13	3,051	103	17	14	18	20	29	18
37	Maldah	10	6	3,071	13	3			3	4	
38	Sonthal Pergunnahs	6	6	11,254	219	11	9	11	18	30	44
	Orissa Division.										
39	Cuttack	13	13	8,747	2,310	349	328	312	337	294	314
40	Pooree	6	6	5,166	1,507	274	194	221	191	178	178
41	Balasore	10	10	6,393	2,320	586	427	394	340	371	383
	Chota Nagpore Division										
42	Hazaribagh	17	17	7,702	529	46	88	92	155	124	123
43	Lohardugga	22	22	8,511	1,097	96	97	130	131	187	197
44	Singhbhum	6	6	[illegible]	[illegible]	78	58	85	95	113	114
45	Manbhum	17	17	6,176	509	64	50	111	118	119	119
	TOTAL FOR THE PROVINCE	649	627	227,615	24,150	4,865	3,982	4,634	5,000	5,050	4,349

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 24th April 1885.

in the Districts of the Bengal Province during each month of the year 1884.

5						6			7			8	9
						Total.			Ratio of Deaths per 1,000 of Population.				
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
41	30	36	46	78	44	439	191	630	·65	·26	·45	·66	1
54	34	42	27	39	41	346	220	566	·68	·41	·54	·57	2
17	9	1	13	18	14	98	68	166	·25	·16	·20	·19	3
308	311	256	307	362	413	2,225	1,715	3,940	1·79	1·34	1·56	1·53	4
71	71	84	109	168	174	610	606	1,216	1·93	1·74	1·83	1·81	5
38	46	63	97	94	138	437	431	868	2·50	2·42	2·46	2·35	6
109	117	147	206	262	311	1,047	1,037	2,084	2·13	1·97	2·05	2·02	
143	147	164	220	241	386	1,295	1,254	2,549	4·09	3·93	4·01	3·39	7
77	73	90	117	214	218	799	622	1,421	·96	·78	·88	·81	8
119	122	110	145	180	253	976	614	1,590	6·63	5·89	6·32	7·64	8
196	195	209	262	394	471	1,775	1,236	3,011	1·81	1·38	1·61	1·75	
24	22	27	34	33	33	318	229	547	·39	·26	·33	·59	9
15	10	3	14	17	52	154	76	230	·16	·07	·11	·14	10
19	18	28	34	40	37	227	116	343	·38	·18	·27	·30	11
11	13	26	39	64	56	212	139	351	·37	·27	·32	·26	12
14	8	6	6	16	21	126	60	186	·16	·08	·12	·22	13
17	12	21	19	32	13	137	38	175	·20	·05	·13	·08	14
13	15	27	21	40	38	244	136	380	·22	·13	·18	·20	15
10	12	8	10	22	18	58	50	108	·15	·13	·14	·11	16
16	18	18	70	45	35	262	151	413	·40	·22	·31	·20	17
53	64	67	39	33	16	207	142	349	2·31	2·12	2·23	1·01	18
9	21	18	16	8	10	83	47	130	·27	·17	·22	·17	19
117	107	150	315	475	524	1,753	1,446	3,199	1·69	1·33	1·51	1·01	20
20	49	51	77	92	90	466	304	770	·57	·36	·47	·27	21
55	45	51	50	87	134	496	372	868	·50	·40	·45	·28	22
66	55	75	100	143	142	663	403	1,066	·42	·26	·34	·23	23
53	44	39	52	75	83	319	269	588	·60	·44	·51	·64	24
18	26	35	16	44	26	159	113	272	·38	·27	·33	·22	25
37	48	43	93	110	127	461	345	806	·59	·46	·53	·22	26
417	640	465	315	395	254	2,303	1,813	4,116	2·68	2·01	2·34	2·27	27
123	128	110	93	66	41	555	352	907	·53	·32	·42	·47	28
65	76	69	40	44	37	386	233	619	·40	·22	·31	·42	29
104	184	166	174	218	180	1,070	679	1,749	·84	·51	·67	1·05	30
165	191	197	206	292	269	1,419	1,091	2,510	1·09	·81	·95	1·12	31
347	306	337	280	263	267	2,342	1,693	4,035	2·16	1·41	1·76	1·59	32
41	48	27	24	33	15	219	121	340	·25	·14	·19	·24	33
74	76	44	58	62	52	368	272	640	·37	·27	·32	·34	34
154	197	168	134	190	137	1,317	982	2,299	1·34	·99	1·16	·53	35
25	13	14	7	10	20	124	81	205	·13	·08	·11	·15	36
1	3	3	1	3	5	16	10	26	·04	·02	·03	·05	37
89	56	48	49	33	9	273	134	407	·34	·17	·25	·25	38
324	358	305	373	358	393	2,464	1,591	4,045	2·02	1·72	2·25	1·73	39
218	273	249	229	220	267	1,519	1,173	2,692	3·40	2·65	3·02	2·32	40
402	346	341	438	441	463	2,760	2,172	4,932	5·37	4·48	5·21	4·78	41
138	151	88	53	32	33	634	439	1,073	1·16	·78	·97	·63	42
187	278	264	159	127	99	1,180	781	1,961	1·48	·96	1·21	1·54	43
102	99	85	38	61	48	589	387	976	2·09	1·37	1·73	1·51	44
124	91	77	93	88	64	700	417	1,117	1·33	·79	1·05	·84	45
4,525	5,089	4,590	4,848	5,706	5,788	33,80	24,568	58,376	1·02	·73	·88	·81	

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. II.

STATEMENT AND MAP ILLUSTRATING THE DISTRIBUTION OF CHOLERA IN BENGAL

DURING THE YEAR 1884.

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1884.

1	2	3	4	5	6	7	8	9	10	11
									NUMBER OF THOSE	
DISTRICTS.	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each Sub-division.	Affected by Cholera.	Not affected by Cholera.
Burdwan	1	Burdwan or Sudder	639,593	January 1884	December 1884	736	March to May and August.	1,726	120	1,606
	2	Kalna	237,607	February	Ditto	311	March to May and December.	701	75	626
	3	Cutwa	230,209	March	Ditto	256	March to June	528	52	476
	4	Raniganj	284,414	February	Ditto	982	Ditto	712	94	618
		District Total	1,391,823	....	....	2,285	....	3,667	341	3,326
Bankura	5	Bankura or Sudder	647,085	January	December	978	January to June	3,967	176	3,791
	6	Bishenpur	394,667	Ditto	Ditto	199	March to May	1,450	48	1,402
		District Total	1,041,752	....	....	1,177	......	5,417	224	5,193
Birbhum	7	Soori or Sudder	483,921	March	December	693	April, May, November and December.	2,023	126	1,897
	8	Rampurhat	310,507	February	Ditto	473	April, May, July and December.	1,224	92	1,132
		District Total	794,428	....	....	1,166	......	3,247	218	3,029
Midnapore	9	Midnapore or Sudder	1,297,018	January	December	1,338	April to July	9,360	410	8,950
	10	Ghatal	257,333	Ditto	Ditto	310	April to June	913	95	818
	11	Tumlook	479,218	Ditto	Ditto	991	January to May, November and December.	1,606	247	1,359
	12	Contai	481,996	Ditto	Ditto	1,237	January to April, June and July.	2,427	272	2,155
		District Total	2,515,565	....	....	3,876	....	14,306	1,024	13,282
Hughli	13	Hughli or Sudder	308,217	January	December	420	March to May, November and December.	873	110	763
	14	Serampore	351,955	Ditto	Ditto	737	February to May, November and December.	926	142	784
	15	Jehanabad	354,833	Ditto	Ditto	223	to May	650	71	579
		Total of Hughli, excluding Serampore	663,050	....	....	643	......	1,523	181	1,342
		Total of Hughli including Serampore	1,015,005	....	......	1,380	......	2,449	323	2,126
Howrah	16	Howrah or Sudder	311,644	January	December	1,039	February to May, November and December.	382	96	286
	17	Ulubaria	323,737	Ditto	Ditto	480	January to May and December.	1,114	180	934
		District Total	635,381	....	....	1,519	......	1,496	276	1,220
24-Pergunnahs	18	Tollygunge or Sudder	835,899	January	December	3,974	January to July, November and December.	1,959	359	1,600
	19	Dum-Dum	31,578	March	June	28	March to May	297	35	262
	20	Barrackpur	62,417	January	December	136	January to April and August.	92	24	68
	21	Baraset	279,038	Ditto	Ditto	448	January, March to May and December	916	140	776
	22	Bussirhat	316,597	Ditto	Ditto	296	March, April and December.	796	59	737
	23	Diamond Harbour	344,330	Ditto	Ditto	1,811	January to May, November and December.	1,532	399	1,133
		District Total	1,869,859	....	....	6,693	....	5,592	1,016	4,576
Nuddea	24	Kishnaghur or Sudder	374,973	January	December	1,631	February to June and December.	544	218	326
	25	Ranaghat	241,205	Ditto	Ditto	660	January to May and December.	511	113	398
	26	Kushtia	446,094	Ditto	Ditto	3,185	January to June, November and December	861	422	439
	27	Chuadanga	254,295	Ditto	Ditto	1,191	January to May	452	179	273
	28	Meherpore	338,554	Ditto	Ditto	2,924	February to May and December.	596	275	321
		District Total	1,655,721	....	....	9,591	....	2,964	1,207	1,757
Jessore	29	Jessore or Sudder	628,939	January	December	1,564	January to May and December.	1,584	218	1,366
	30	Jhenida	326,835	Ditto	Ditto	1,168	March to May, November and December.	882	218	664
	31	Magura	293,303	Ditto	Ditto	1,921	January, March to June and October to December.	837	245	592
	32	Narail	328,172	Ditto	Ditto	958	January, April, November and December.	809	223	586
	33	Bongong	362,126	Ditto	Ditto	958	January to May and December.	783	84	699
		District Total	1,939,375	....	......	6,569	......	4,895	988	3,907

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1884—continued.

1	2	3	4	5	6	7	8		10	11
									Number of those	
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each Sub-division.	Affected by Cholera.	Not affected by Cholera.
Khulna	34	Khulna or Sudder	344,389	January 1884	December 1884	1,440	January to June, November and December.	880	322	564
	35	Bagirhat	300,793	Ditto	Ditto	828	January, March to May, November and December.	849	338	511
	36	Satkhira	434,766	Ditto	Ditto	583	March to May and December.	1,155	162	993
		District Total	1,079,948	....	... ...	2,851	... .	2,890	822	2,068
Murshidabad	37	Berhampur or Sudder	443,688	February	December	3,381	March to May, November and December.	1,014	318	696
	38	Kandi	294,809	Ditto	Ditto	405	March to May, November and December.	765	145	620
	39	Lalbagh	184,213	Ditto	Ditto	751	March to May, November and December.	969	174	795
	40	Jungipur	304,080	January	Ditto	1,591	March to June and October to December.	969	204	765
		District Total	1,226,790	....	..... .	6,128	. . . .	3,717	841	2,876
Dinagepore	41	No Subdivision—District	1,514,316	January	December	481	December ...	6,921	146	6,775
Rajshahye	42	Beauleah or Sudder	597,274	January	December	3,635	January, March to June, November and December.	2,221	440	1,781
	43	Nattore	472,785	Ditto	Ditto	2,476	March to July, November and December.	1,584	349	1,235
	44	Nowgong	268,579	Ditto	Ditto	517	January, April and October to December.	1,362	110	1,252
		District Total	1,338,638	... .	....	6,628	....	5,167	899	4,268
Rungpore	45	Rungpore or Sudder	666,324	March	December	56	Not severe	2,436	28	2,408
	46	Bagdokra	415,824	Ditto	November	319	May to July	392	37	355
	47	Kurigram	631,954	January	December	424	June, November and December.	2,386	61	2,325
	48	Gaibanda	450,862	February	Ditto	324	November and December.	1,523	68	1,455
		District Total	2,097,964	......	......	1,163	.. ..	6,737	194	6,543
Bogra	49	No subdivision—District	734,358	January	December	1,398	October to December ..	4,141	334	3,807
Pubna	50	Pubna or Sudder	611,964	January	December	2,965	March to May, October and November.	1,840	371	1,469
	51	Serajgunge	699,764	Ditto	Ditto	1,449	April to June, October and November.	2,129	261	1,868
		District Total	1,311,728	... ..	. ....	4,414	... .	3,969	632	2,337
Darjeeling	52	Darjeeling or Sudder	65,959	July	September	7	Slight	122	2	120
	53	Kurseong and Silliguri	90,178	March	Ditto	20	June	821	9	812
		District Total	156,137		......	27	....	943	11	932
Julpaiguri	54	Julpaiguri or Sudder	497,779	April	November	203	May	895	26	869
	55	Alipore	83,783	Ditto	May	2	Slight	143	1	142
		District Total	581,562	......	......	205	....	1,038	27	1,011
Dacca	56	Dacca or Sudder	690,629	January	December	2,288	January to May, November and December.	2,043	366	1,677
	57	Naraingani	470,657	Ditto	Ditto	1,107	January, February, April, May and October to December.	1,892	334	1,558
	58	Munshiganj	519,447	Ditto	Ditto	2,719	January to May and September to December.	788	400	388
	59	Manickganj	427,217	Ditto	Ditto	2,051	March, April and October to December.	1,015	434	581
		District Total	2,116,350	.. ...	......	8,165	....	5,738	1,534	4,204
Faridpore	60	Faridpore or Sudder	620,545	January	December	2,872	January to June and October to December.	1,917	565	1,352
	61	Madaripore	689,704	Ditto	Ditto	4,834	January to May and October to December.	1,515	645	870
	62	Goalundo	321,485	Ditto	Ditto	1,019	February to June, November and December.	1,223	165	1,058
		District Total	1,631,734	......	......	8,725	....	4,655	1,375	3,280

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1884—continued.

1	2	3	4	5	6	7	8	9	10	11
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each sub-division.	Number of those — Affected by Cholera.	Not affected by Cholera.
Backergunge ...	63	Backergunge or Sudder ...	814,595	January 1884	December 1884 .	3,965	January to June, November and December	1,982	742	1,240
	64	Patuakhali	447 306	Ditto ...	Ditto .	2,311	January to June November and December.	1,001	310	69
	65	Perozepur	426,758	Ditto	Ditto ...	1,978	January to May, November and December	945	375	570
	66	Shabazpur or Bhola ...	212,230	Ditto ...	Ditto ...	556	January, February, April to August and December.	408	67	341
		District Total ...	1,900,889	. ....	.....	8,810	. . .	4,336	1,494	2,842
Mymensing ...	67	Mymensing or Sudder ...	714,524	January	December	1,543	April to June, November and December.	2,667	355	2 312
	68	Netrokona	688,115	Ditto	Ditto	1,433	April to June, November and December	1,508	237	1,271
	69	Jamalpur	497,766	Ditto	Ditto	565	May, June and October to December.	1 730	159	1.571
	70	Kishorganj ..	467,320	Ditto	Ditto	986	March to May November and December.	1,682	134	1,548
	71	Atia	751.211	Ditto	Ditto	1,847	April to June, November and December.	2,501	458	2,043
		District Total	3,051 966	.....	. .	6,374	....	10,088	1.343	8 745
Chittagong ...	72	Chittagong or Sudder ...	970,993	February	December	1,021	May to July, November and December.	1,122	162	960
	73	Cox's Bazar	161,348	April	Ditto	243	April, May and December.	268	47	221
		District Total .	1,132,341	.....	.....	1,264	....	1,390	209	1,181
Noakhalli ...	74	Sudharam or Sudder ...	578 797	January	December	1,237	August, September, November and December.	1,835	295	1,540
	75	Fenny	241,975	August	Ditto	137	August, September and December.	636	39	597
		District Total ...	820,772	.....	...	1,374	....	2,471	334	2,137
Tipperah ..	76	Comillah or Sudder ...	703,540	January	December	950	November and December.	3,733	295	3,438
	77	Brahmanberiah	531,117	Ditto	Ditto	1,435	January to May, October to December.	1,394	202	1,192
	78	Chandpur	284,381	Ditto	Ditto	666	March to May, November and December.	1,324	256	1,068
		District Total ...	1 519,338	.....	.....	3,051	....	6,451	753	5,698
Patna ...	79	Patna or Sudder	585,887	March	November ...	970	May to August	1,924	216	1,708
	80	Dinapore	166,128	April	October	382	July to September .	361	47	314
	81	Barrh	376,074	March	December .. .	61[illegible]	April to August .. .	1.176	139	1,037
	82	Behar	628,767	Ditto	November ...	1,589	May to October	2,513	287	2,226
		District Total ..	1,756,856	.....	.....	3,553	....	5,974	689	5,285
Gya ...	83	Gya or Sudder	805,364	January ...	December	774	April and July to September.	2,820	85	2,735
	84	Aurangabad	445,641	Ditto	November ...	417	June to October ...	1,604	103	1,501
	85	Jehanabad	385,189	Ditto	Ditto	237	July and August ...	825	43	782
	86	Nawada	488,188	April	December	594	July to September ..	1,282	59	1 223
		District Total ..	2,124,682	.....	...	2,022	.. . ..	6,551	290	6,241
Shahabad ...	87	Arrah or Sudder	760,273	April . .	October	666	June to August	1,390	78	1,312
	88	Buxar	423,193	March .. .	Ditto	463	May to August	786	72	714
	89	Sasseram	519,207	April	December	486	July and August ..	1,861	59	1,802
	90	Bhabuah	322,256	Ditto	November ...	160	April, May and July ...	1,341	35	1,306
		District Total ...	1,964,909	.....	.....	1.775	.. . .	5,378	244	5,134
Mozufferpore ...	91	Mozufferpore or Sudder	1,019,635	April	December ...	51	Slight	2,043	15	2,028
	92	Sitamarhi	837,894	Ditto	November ...	139	May	1,101	16	1,091
	93	Hajipur	724,531	Ditto	December	127	August	1 707	22	1,685
		District Total	2,582,060	.....	... ..	317	... .	5,151	[illegible]	5,107
Durbhanga ...	94	Durbhanga or Sudder ..	969,969	April	December	310	Not severe during any month.	2,260	31	2,229
	95	Tajpur	755,943	May	Ditto	103	Ditto ditto ..	1,173	38	1,135
	96	Madhubani	907,505	April	Ditto	343	Ditto ditto	2,926	33	2,893
		District Total ...	2,633,417	.....	.. ...	756	....	6,559	102	6,257

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1884—concluded.

1	2	3	4	5	6	7	8	9	10	11
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each Sub-division.	Number of those — Affected by Cholera.	Number of those — Not affected by Cholera.
Sarun	97	Chupra or Sudder	985,834	March 1884	December 1884	614	August and September	1,732	91	1,641
	98	Sewan	749,482	January	November	364	Ditto ditto	1,518	65	1,453
	99	Gopalgunge	545,066	May	Ditto	360	Ditto ditto	1,328	61	1,267
		District Total	2,280,382	......	......	1,338	....	4,578	217	4,361
Chumparun	100	Motihari or Sudder	1,017,556	June	November	491	August and September	4,594	49	4,545
	101	Bettiah	704,052	Apri	Ditto	158	August	3,172	28	3,144
		District Total	1,721,608	......	......	649	....	7,766	77	7,689
Monghyr	102	Monghyr or Sudder	834,376	January	November	620	June to August and October.	1,201	173	1,028
	103	Begusorai	583,426	April	Ditto	166	Slight	643	33	610
	104	Jamui	551,972	Ditto	December	595	June to August	2,433	137	2,296
		District Total	1,969,774	......	......	1,381	....	4,277	343	3,934
Bhagulpore	105	Bhagulpore or Sudder	546,809	February	December	689	April to June	1,209	132	1,077
	106	Supul	600,874	March	August	107	May and June	734	65	669
	107	Madehpur	398,006	January	July	11	Slight	364	4	360
	108	Banka	420,379	April	October	707	May to October	912	150	762
		District Total	1,966,158	......	......	1,604	....	3,219	351	2,808
Purneah	109	Purneah or Sudder	511,945	February	October	104	Not severe	944	7	937
	110	Arrareah	401,679	October	November	45	Ditto	696	3	693
	111	Kissenganj	631,301	February	September	90	May and June	1,219	15	1,204
	112	Kadwa	303,762	April	December	178	April, June, November and December	792	31	761
		District Total	1,848,687	......	......	417	....	3,651	56	3,595
Maldah	113	No sub-division—District	710,448	February	December	1,158	April to June and December.	3,071	236	2,835
Sonthal Pergunnahs.	114	Dumka	363,186	May	December	269	June to August	2,909	68	2,841
	115	Rajmahal	253,825	February	Ditto	398	March to May and August.	1,326	105	1,221
	116	Deoghur including Jamtara	397,670	March	November	1,000	March to September	4,010	238	3,772
	117	Pakur	204,919	Ditto	December	659	March to June	1,251	126	1,125
	118	Godda	348,493	January	November	390	May to August	1,758	60	1,698
		District Total	1,568,093	......	......	2,716	....	11,254	597	10,657
Cuttack	119	Cuttack or Sudder	720,454	January	December	3,160	April, June to December.	3,496	941	2,555
	120	Kendrapara	575,113	Ditto	Ditto	2,649	Throughout the year	2,867	540	2,327
	121	Jajpur	499,498	Ditto	Ditto	1,673	May to December	2,384	509	1,875
		District Total	1,795,065	......	......	7,482	....	8,747	1,990	6,757
Poori	122	Poori or Sudder	565,082	January	December	2,465	April and June to December.	3,852	570	3,282
	123	Khurda	323,405	Ditto	Ditto	663	June to December	1,314	138	1,176
		District Total	888,487	......	......	3,128	....	5,166	708	4,458
Balasore	124	Balasore or Sudder	519,707	January	December	4,781	January to July, November and December.	3,369	926	2,443
	125	Bhadruk	425,573	Ditto	Ditto	2,592	March to July, November and December.	3,024	612	2,412
		District Total	945,280	......	......	7,373	....	6,393	1,538	4,855
Hazaribagh	126	Hazaribagh or Sudder	672,238	March	October	442	May to August	4,186	40	4,146
	127	Giridhi	432,504	Ditto	Ditto	844	April and July to September.	3,516	137	3,379
		District Total	1,104,742	......	......	1,286	....	7,702	177	7,525
Lohardugga	128	Ranchi or Sudder	1,124,422	May	September	104	Slight	5,874	11	[illegible]
	129	Palamow	484,822	July	Ditto	87	July	2,637	5	[illegible]
		District Total	1,609,244	......	......	191	....	8,511	16	8,495
Singbhum	130	No sub-division—District	561,964	February	November	112	April	3,023	23	3,000
Manbhum	131	Purulia or Sudder	861,644	February	December	1,197	April to June	4,395	213	4,182
	132	Govindpur	196,584	March	September	652	April to July	1,781	142	1,639
		Distric Total	1,058,228	......	......	1,849	....	6,176	355	5,821

Office of the Sany. Commr. for Bengal,
The 24th April 1885.

R. LIDDERDALE, M.D.
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. III.

SUMMARY OF SANITARY WORKS, IMPROVEMENTS, &c., CARRIED OUT IN TOWNS AND DISTRICTS

DURING THE YEAR 1884.

Summary of Sanitary Works, Improvements, &c., which were carried out in Towns and Districts during the year 1884.

CONSERVANCY

In Towns.

Latrines and Urinals.

Public Latrines and Urinals were constructed in the following Municipalities—

TOWNS.	DISTRICTS.	NUMBER WITH REMARKS.
Ghattal ...	... Midnapore ...	4 pucca latrines (1 in progress).
Serampore ...	... Serampore ...	7 urinals in different places and 1 latrine in Rishra
Bansberia ...	... Hughli ...	1 latrine in progress.
Bhudressur ...	... Ditto ...	1 latrine.
Bali ...	.. Howrah ...	1 ditto.
Howrah ..	... Ditto	2 urinals, 1 at Chandmari road and 1 at the Kutchery.
Suburbs of Calcutta	... 24-Pergunnahs ...	Chambered urinals in Magistrate's office compound (number not stated).
City Murshidabad	... Murshidabad ...	3 latrines (1 in progress).
Dinajpur ...	... Dinajpur ...	5. Two latrines at Borobunder, 1 at Ramnagar and 2 at Patrarpur.
Rungpore ...	... Rungpore ..	1 latrine with sweeper's house.
Sherpur ...	... Bogra ..	10. Seven latrines and three urinals.
Serajgunge ...	... Pubna ...	1 Latrine.
Darjiling ...	... Darjiling ...	4. Two latrines and 2 urinals.
Kurseong ...	... Ditto ...	4. Three latrines and 1 urinal.
Naraingunge ...	... Dacca ...	1 latrine near Gopinathjee's Akra
Barisal ...	... Backergunge ...	2 latrines, one at Hatkhola and 1 at Kotwalli.
Chittagong ...	... Chittagong ...	1 latrine at Underkilla with iron posts and corrugated roofs.
Brahmanberia ...	... Tipperah ...	Number not mentioned.
Behar ...	... Patna ...	1 latrine
Dinapore ...	... Do. ...	5 portable latrines.
Khagowl ...	... Do. ...	5 ditto
Jehanabad ...	... Gya .	Number not stated.
Mozufferpore ..	.. Mozufferpore .	1 latrine for females at Goadree bazar.
Durbhanga ...	... Durbhanga ...	2 tattie latrines
Madhubani ...	... Ditto ...	4 latrines.
Roserah ...	... Ditto ...	4 ditto.
Chupra ..	... Sarun ...	1 iron urinal.
Monghyr ...	... Monghyr ...	2 latrines.
Jamalpore ...	... Ditto ...	1 pucca latrine.
Bhagulpore ...	... Bhagulpore ...	12 pucca latrines.
Sahebgunge ...	... Sonthal Pergunnahs	3 tattie latrines.
Cuttack ...	... Cuttack ...	2 latrines, one for males and 1 for females at Gossain-bagicha.
Puri ...	... Puri ...	2. One pucca latrine near the kutchery, and one Ramsay's portable latrine.
Hazaribagh ...	... Hazaribagh ...	1 latrine near market.
Ranchi ...	... Lohardugga ...	1 latrine.
Daltongunge ...	... Ditto ..	1 ditto.

Carts, Bullocks, &c.

Conservancy and night-soil carts, with bullocks, &c., for the more efficient carrying out of conservancy arrangements, were provided in the under-mentioned Municipalities—

TOWNS.	DISTRICTS.	NATURE OF WORK.
Santipore ...	... Nuddea ...	3 scavenging carts with bullocks.
Julpaiguri ...	... Julpaiguri ...	1 Cantwell's patent night-soil cart.
Faridpore ...	... Faridpore ...	1 conservancy cart.
Dinapore ...	... Patna ...	Number not stated.
Behar ...	... Do. ...	5 conservancy carts.
Nobinuggur ...	... Gya ...	1 conservancy cart.
Obra ...	... Do. ...	1 Ditto.
Durbhanga ...	... Durbhanga ...	2 night-soil carts.
Chupra ...	... Sarun ...	8 conservancy and night-soil carts.
Ditto ...	... Do. ...	8 conservancy hand carts.
Sahebgunge ...	... Sonthal Pergunnahs	1 watering cart.
Puri ...	... Puri ...	6 metallic night-soil carts.

Conservancy Establishment.

In the following Municipalities the Conservancy establishments were strengthened—

TOWNS.	DISTRICTS.	NUMBER WITH REMARKS.
Midnapore ...	... Midnapore	... 1 Sanitary Inspector appointed.
Sherpur ...	... Bogra	... 5 additional mehters.

Buildings constructed for Conservancy purposes.

Under this head the following were undertaken: a pucca shed for the conservancy cattle at Bullubpore in Serampore and some shed at Baidabatti, both in the Hughli district; a shed for mehters at Patrarpur in Dinajpur; one house for sweepers at Rungpore; four sheds, two for bullocks, and two for mehters near trenching ground in Dacca; sheds for domes near the Murli hill and Bisar tank in Gya; a shed for conservancy bullocks; compound wall for the conservancy station at Jolhasahi; wooden railing near eastern conservancy station; and sheds for the conservancy carts at Monglabag in Cuttack.

General Conservancy Improvements.

Of the important general conservancy improvements which were effected during the year, the following deserve mention:—In the *Dacca* Municipality three of the abominable "gors" were filled up. In the *Patna* Municipality, after much opposition and controversy, the house scavenging scheme has been established in the City Proper which is most thickly populated. Five thousand, or half the number of private privies, are being cleaned, and the night-soil from them is trenched in grounds especially rented for the purpose. In the *Suburbs of Calcutta* the improvement of Woolfut-bagan bustee was taken in hand; the Motijheel and Katal-bagan bustees were inspected preliminary to sanitary improvements being carried out; and six other bustees, among which are the gowalla-bustees, regarding which it is proposed to establish public cow-sheds, were surveyed. Trees were planted on the roadsides and on the avenue road at Howrah; on the roads in the Serajgunge town in Pubna; on the roadsides in Gya (2,934) at a cost of Rs. 1,072-4; and on the sides of the station road and on the market compound in Purulia in Manbhum. The sanitary condition of the Seebpore and Banstolla foreshore and Howrah and Jugut Banerjee's Ghat in Howrah town was improved generally with regard to cleanliness, &c., at a cost of Rs. 904-3-6. A depôt near Hadis' house in the Mozufferpore town was constructed at a cost of Rs. 115-10-5. The ditch near the dispensary in the Sasseram town in Shahabad, and a large pit at Roserah in Durbhanga were filled up, the former at a cost of Rs. 99-11 and the latter at Rs. 311-9.

DRAINAGE

In Towns.

General Drainage Schemes carried out, or in hand.

The improvement of the drainage of the *Raniqunge* town in Burdwan is awaiting the report of the Engineer on the proposed scheme, the levels having been taken. At *Khulna*, formerly the head-quarters of the district, converted into a Municipality at the close of the year 1881, the drainage was diverted from its previous channels towards new channels at a cost of Rs. 16,997 to the Road Cess Department. The work has progressed to a good extent. In *Lalbagh* or *City Murshidabad* the drainage works at Azimgunge, commenced in 1883, have been completed, and the outlet, it is said, is now effective. Proposals referring to proper drainage schemes for *Jeagunge* and *Azimgunge*, and to the improvement of the present drainage system of the *Murshidabad* town proper, estimated to cost Rs. 30,000, are under consideration. Estimates and plans of the scheme for improving the drainage of the *Dinajpur* town, in connection with the general drainage project suggested by the Sanitary Commission of 1878, have been submitted to Government for sanction. The scheme for improving the drainage of the *Chittagong* town, referred to in the report for 1883, has not yet been taken up. The scheme for redigging the Chaktai nulla in the same town has also fallen out of sight. This, if carried out, would have immensely improved the drainage of a very large area of low-lying ground to the great advantage of the inhabitants therein. In fact, nothing can be done to drain this area till the Chaktai is redug. The question of radically improving the drainage of the *Patna* Municipality was under consideration during the year. The municipal Engineer was engaged throughout the rainy season investigating the matter, and has drawn up some excellent reports on a general drainage scheme. But it appears that it is beyond the means of the municipality to give effect to the undertaking, and that it would entail the raising of a large loan, take years to complete the work, and involve loss of money in surveys, &c. An alternative plan for providing the whole town with pucca spoon-shaped drains to carry off rain water only, is under consideration. The work of this year consisted of constructing surface drains in three of the mohullas, and completing (1) the largest pucca main drain, which conveys the drainage of an immense area under the railway line and then discharges it into low ground; and (2) the most important pucca sub-main drain, which conveys the drainage from the densely-populated parts near the chowk to the above-mentioned main drain. These works have, it is said, already proved of the greatest service. Their extension is necessary, but want of funds precludes this being done.

Other Drainage Measures.

New drains, with the necessary culverts, pipes, bridges, &c., were constructed, or alterations, &c., of existing drains calculated to improve drainage, such as providing culverts, pipes, sluices, protecting walls, &c., re-excavating, rectifying levels, removing of obstructions, carrying out extensions, &c., were effected in the following Municipalities—

TOWNS.	DISTRICTS.
Dainhat ...	Burdwan.
Kalna ...	
Bankura ...	Bankura.
Bishenpore ...	
Sonamukhi ...	
Patroshair ...	
Kotalpore ...	
Midnapore ...	Midnapore.
Tumluk ...	
Hughli and Chinsurah ...	Hughli.
Bhudressur ...	
Howrah ...	Howrah.
Kishnaghur ...	Nuddea.
Nuddea ...	
Santipore ...	
Berhampore ...	Murshidabad.
City Murshidabad ..	
Kandi ...	
Satkhira ...	Khulna.
Debhatta ...	
Dinagepore ...	Dinagepore.
Nattore ...	Rajshahye.
Bogra ...	Bogra.
Sherpur ...	
Serajgunge ...	Pubna.
Darjiling ...	Darjiling.
Dacca ...	Dacca.
Naraingunge ...	
Madaripore ..	Faridpore.
Barisal ...	Backergunge.
Perozepore ...	
Nalchitti ...	
Jhalakati ...	
Bazitpore ..	Mymensing.
Chittagong ...	Chittagong.
Baraset ...	24-Pergunnahs.
Naihatti ...	
Goberdanga ...	
Suburbs of Calcutta	
South Suburban ...	
Baranagore ...	
Barripore ...	
Rajpore ...	
Joynuggur ...	

TOWNS.	DISTRICTS.
Bussirhat ...	24-Pergunnahs.
Baduria ...	
Itanda	
Kotechandpur ..	Jessore.
Moheshpur ...	
Brahmanberia ...	Tipperah.
Patna City ...	Patna.
Behar ...	
Mokamah ...	
Nowada .	
Baikutpore ..	
Dinapore	
Gya .	Gya.
Nawada ...	
Hasna ...	
Rajowli ...	
Jehanabad ...	
Daudnugur ...	
Jugdispore ...	Shahabad.
Buxar	
Mozufferpore ..	Mozufferpore.
Hajipore ...	
Sitamarhi ...	
Durbhanga	Durbhanga.
Madhubuni ...	
Roserah ..	
Sewan ..	Sarun.
Revilgunge	
Motihari ...	Chumparun.
Bettiah ...	
Monghyr ...	Monghyr.
Jamalpore ..	
Bhagulpore ...	Bhagulpore.
Colgong ...	
Purneah ...	Purneah.
English Bazar .	Maldah.
Old Maldah ...	
Sahebgunge ...	Sonthal Pergunnahs.
Cuttack ..	Cuttack.
Jajipur ...	
Chattra ...	Hazaribagh.
Ranchi ...	Lohardugga.
Chyebassa ...	Singbhum.
Purulia ...	Manbhum.

In Districts.

Drainage Works carried out in the Districts.

Further improvements to the drainage of the fever-stricken district of *Nuddea* were effected, the work consisting of the construction of a good many arched culverts and wrought iron girder bridges on masonry abutments; of the completion of the works on the road from Chagda railway station to Bongong at a cost of Rs. 1,346; and of the construction of four arched culverts on the Chapra and Nishchindpur road at a cost of Rs. 1,967. These culverts span drainage channels. Many drainage schemes were prepared during the year, and some of them have been sanctioned, but none of them have yet been carried out for want of funds, and some elaborate schemes are under preparation. In the *Sonthal Pergunnahs* district the question of draining the stagnant marsh to the south of Rajmehal is still under consideration. Plans and estimates have been prepared, and enquiries are being instituted as to how far the proprietors of the land are prepared to contribute towards the project; but there are so many petty interests involved that it is doubted whether they will combine in carrying out the work. *Howrah.*—Drainage pipes were put up in different parts of the district at a cost of Rs. 700, and four bridges were constructed in the Uluberiah sub-division at a cost of Rs. 251. *24-Pergunnahs.*—A bridge was constructed over the Sursa khal in Diamond Harbour sub-division, the cost amounting to Rs. 2,019. *Rajshahye.*—Some drains were opened out at a cost of Rs. 180. *Pubna.*—A span of 5 running feet was made to bridge No. 1 on the Chatmohur road for the free drainage of the adjoining fields, and a bridge on the Saikol road in the Serajgunge sub-division was constructed. *Darjiling.*—Drainage works were undertaken at Silliguri and Matiagurah Hat at a cost of Rs. 555-10 and Rs. 1,963-7 respectively. *Backergunge.*—Ten khals were excavated in different parts of the district which cost Rs. 857. *Tipperah.*—Five khals were excavated in

villages at a cost Rs. 1,167-2-9. *Patna.*—One hundred and thirty-nine culverts were constructed, the cost being Rs. 23,184-9. *Gya.*—Surface drains were constructed in the Aurungabad sub-division. *Sarun.*—Bridges and culverts were constructed at a cost of Rs. 26,328. *Bhagulpore.*—Wooden bridges on roads Nos. 183 and 209 and two timber bridges on road No. 11 in Sudder sub-division were constructed *Maldah.*—Kutcha drains and tal-wood bridges were constructed at a cost of Rs. 4,000 and Rs. 1,917 respectively.

ROADS

In Towns.

New Roads.

New roads with the necessary appliances for securing drainage, waterway, &c., were constructed, or were in progress of construction, and existing roads were extended or widened in the undermentioned towns—

TOWNS.	DISTRICTS.	TOWNS.	DISTRICTS.
Kulna	Burdwan.	Dacca Naraingunge Manickgunge	Dacca.
Bankura	Bankura.	Faridpore Madaripore	Faridpore.
Midnapore Tumluk Ghattal Chundrakona Khirpai	Midnapore.	Barisal Perozepore	Backergunge.
Serampore Baidyabatti Bhudressur Jehanabad Shambazar Khanakool	Hughli.	Bazitpore Tangail Nasirabad Muktagacha Kishoregunge	Mymensing.
Howrah	Howrah.	Brahmanberia	Tipperah.
Kishnaghur Kushtea Meherpore Santipore	Nuddea.	Daudnugger	Gya.
Rajpore South Dum-Dum Baduria	24-Pergunnahs.	Jugdispore Buxar	Shahabad.
Jungipore Kandi	Murshidabad.	Mozufferpore Sitamurhi	Mozufferpore.
Chanduria Debhatta	Khulna.	Madhubani	Durbhanga.
Beauleah	Rajshahye.	Sewan Chuprah Revilgunge	Sarun.
Bogra Sherpore	Bogra.	Purneah	Purneah.
Pubna Serajgunj	Pubna.	English Bazar	Maldah.
Kurseong	Darjiling.	Deoghur	Sonthal Pergunnahs.
		Cuttack	Cuttack.
		Puri	Puri.
		Ranchi	Lohardugga.
		Chyebassa	Singbhum.
		Purulia	Manbhum.

Roads newly Metalled.

The roads in the following Municipalities were newly metalled, or the process was being proceeded with at the close of the year—

TOWNS.	DISTRICTS.	TOWNS.	DISTRICTS.
Kutwa	Burdwan.	Pubna	Pubna.
Tumluk	Midnapore.	Naraingunge	Dacca.
Bansberia	Hughli.	Madaripore	Faridpore.
Bali	Howrah.	Patna City Behar Khagowl	Patna.
Kishnaghur Nuddea Ranaghat Birnagore Santipore	Nuddea.	Jugdispore	Shahabad.
Baraset Naihatti Goberdanga Suburbs of Calcutta South Suburban Baranagore Barriepore Joynuggur North Dum-Dum South ditto	24-Pergunnahs.	Mozufferpore Hajipore Lalgunge Mohnar	Mozufferpore.
Kandi	Murshidabad.	Durbhanga	Durbhanga.
Satkhira	Khulna.	Sewan Revilgunge	Sarun.
Dinagepore	Dinagepore.	Bettiah	Chumparun.
Nattore	Rajshahye.	Colgong	Bhagulpore.
Rungpore	Rungpore.	Kissengunge	Purneah.
Bogra	Bogra.	Old Maldah	Maldah.
		Sahebgunge	Sonthal Pergunnahs.
		Cuttack Kendrapara	Cuttack.
		Ranchi Lohardugga	Lohardugga.
		Chaibassa	Singbhum.

ROADS

In Districts.

In the undermentioned places important roads, whereby the sanitary condition of the villages through which they were laid was greatly improved, were constructed. They were in all cases provided with the necessary culverts, pipes, bridges, &c., for securing adequate waterway—

DISTRICTS.	NUMBER.	PROBABLE COST. Rs. A. P.
Burdwan	Not stated	23,073 0 0
Bankura	Ditto	Not stated.
Midnapore	Ditto	18,414 14 9
Hughli	Ditto	5,000 0 0
Howrah	28	3,703 13 0
Nuddea	7	230 0 0
Dinajpur	Not stated	Not stated.
Pubna	Ditto	Ditto.
Backergunge	41	1,760 0 0
Tipperah	4	1,405 11 6
Patna	2	1,366 11 4
Gya	Not stated	1,419 7 6
Sarun	3	83,422 0 0
Monghyr	Not stated	Not stated.
Bhagulpore	4	2,315 1 2
Ditto	2	Not stated.
Maldah	Not stated	1,150 0 0
Puri	Ditto	Not stated.
Manbhum	Ditto	Ditto.

WATER-SUPPLY

In Towns.

Hughli.—Mr. Finlay, the manager of the Wellington Jute Mills in the Serampore Municipality, had a large cistern constructed, capable of containing 73,000 gallons of water from the river of comparatively pure quality, for the benefit of the work people in the Mahesh and Rishra bustees. *Howrah.*—The Commissioners of this Municipality have now made arrangements for the preparation of plans and estimates of an approved scheme of water-supply in which the other riparian towns are to join. The preparation of the estimates, &c., are to be undertaken at a cost of Rs. 3,168 by Mr. Scott, Executive Engineer, whose services for this project have been lent by Government to the Municipality free of cost. *Rajshahye.*—Opportunity was taken, at the height of the flooding of the Ganges during the rainy season, to flush out the tanks and wells, and to wash out the drains and stagnant pools in the Beauleah and Nattore Municipalities, and thus a thorough cleansing was effected. The inhabitants of the villages in the neighbourhood of these water reservoirs availed themselves of the purer water thus secured, by cutting drains to various distances, and in some cases through public roads and embankments, to introduce the water into their tanks, which had dried up owing to the insufficient rainfall of the past three years. In the *Dacca* town, the further improvements to the filter beds, calculated to prevent leakage, were completed, and a tunnel giving access at all times (except during the highest floods) to the suction pipe was constructed. An out-house for the water-works, and a man-hole for the south tunnel, have also been constructed. The above works cost Rs. 3,656-6-9. Moreover, a boundary wall to the water-works premises has been erected at a cost of Rs. 987-2-6. The land required for building thereon additional settling tanks and filter beds, for the purpose of extending the water-supply, has been acquired and cleared of all huts and buildings. The munificent Nawab Assanoollah has, in commemoration of the visit to India of their Royal Highnesses the Duke and Duchess of Connaught, extended the water-works northwards up to Nawabpore road. The Nawab expended Rs. 11,000 on this work. The canal at *Sarun* was improved at a cost of Rs. 20,000. In the *Bhagulpore* town, the water-work project, referred to in the report of 1882, has been sanctioned by Government, and material and plant are being collected for carrying it out. The Government has lent the services of the Superintending Engineer and his subordinates for the undertaking, free of cost. The work, it is believed, will be completed within 14 months.

Tanks provided in special localities.

New tanks were excavated, and the existing ones either re-excavated, cleaned or improved, and the foul and stagnant ones filled up in the following Municipalities—

TOWNS.	DISTRICTS.	NO.	REMARKS.
Howrah	Howrah	2	One newly excavated, and one deepened and cleaned. River water was introduced into several tanks in the town.
Barrackpore	24-Pergunnahs	...	One channel to tank No. 1 excavated.
Busirhat	Ditto	1	Newly excavated.
Kishnaghur	Nuddea	...	Water from the river Jellinghi was brought into the chain of tanks in the bed of the original river.
Meherpore	Ditto	1	Newly excavated.
Moheshpur	Jessore	1	Ditto.
Pubna	Pubna	...	River water was introduced into several tanks in the town.
Manickgunge	Dacca	1	Re-excavated and extended.
Madaripore	Faridpur	1	Pucca ghat supplied.
Jamalpore	Mymensing	2	One newly excavated (1 in progress).
Sherpur	Ditto	1	Newly excavated.
Brahmanberia	Tipperah	2	Ditto (one in progress).
Chittagong	Chittagong	2	Springs for drinking water.
Arrah	Shahabad	1	Distributary channel.
Buxar	Ditto	1	Newly excavated.
Monghyr	Monghyr	1	Ditto.
Deoghur	Sonthal Pergunnahs	1	Re-excavated.
Cuttack	Cuttack	1	Newly excavated.
Puri	Puri	1	Cleaned and provided with an embankment and a sluice.
Hazaribagh	Hazaribagh	1	Pucca ghat constructed.
Ranchi	Lohardugga	1	Deepened.
Chaebassa	Singbhum	1	Deepened and cleaned.

Wells provided in special localities.

New wells were sunk, or the existing ones improved generally, &c., in the following Municipalities—

TOWNS.	DISTRICTS.	NO.	REMARKS.
Ranigunge	Burdwan	2	Sunk for pilgrims.
Soori	Birbhum	1	Sunk.
Midnapore	Midnapore	5	Re-excavated.
Kishnaghur	Nuddea	3	Sunk (masonry).
Bogra	Bogra	2	Kutcha, with masonry parapets, sunk.
Pubna	Pubna	1	Chain pump provided.
Serajgunge	Do.	3	Sunk.
Jamalpore	Mymensing	1	(In progress).
Sasseram	Shahabad	1	Sunk.
Rosserah	Durbhanga	Number not stated.	Fencing provided.
Revilgunge	Sarun	2	Sunk.
Sewan	Do.	16	Supplied with railing.
Jamalpore	Monghyr	3	Masonry sunk.
Ranigunge	Purneah	3	Ditto (1 in progress).
Sahebgunge	Sonthal Pergunnahs	1	Sunk.
Deoghur	Ditto	1	Do.
Cuttack	Cuttack	2	Do.

In Districts.

Rajshahye.—The mouth of the Narod river in this district, which had silted up, was excavated at a cost of Rs. 1,000, with a view to afford the people good water from the Ganges, and to inundate the bordering villages and the bhils situated within easy reach. The mouth of the Dhobapara khal, which joins the Hoja river with the Moishakhan river, and of two other water-ways, one through Putia thana and the other from Achintola, all of which had silted up, were opened. By this measure the annual flooding of the Moishakhan river was partially restored, and the stagnant Hoja, to which was ascribed the prevalence of the epidemic fever of a virulent and persistent type referred to in paragraph 129 of this report, was to some extent flushed. It is under consideration to deal with the Mudungachi

embankment, so as to enable the country to be flooded for the purpose of both irrigation and the cleaning out of tanks. The reports moreover show that Tanks and Wells were constructed in the following districts. Those provided by private individuals are distinguished from the others:—

Districts.	Localities.	Number of tanks or wells.	Cost.	Names of the private individuals at whose cost they were constructed.
			Rs	
Burdwan	In the localities in which distress, owing to diminished food supply from drought, prevailed, as relief works.	Some new tanks were excavated and some re-excavated.	9,175	
Birbhum	In the famine-stricken villages in thana Nulhati and Dubrajpur, as relief works.	10 tanks excavated ...	Not stated.	
Midnapore ...	In different places	12 ditto ..	5,750	By private individuals, names not furnished.
	In the Boloram Khas Mehal Estate	Some tanks and wells; number not stated.	1,403	Ditto ditto, ditto.
Hughli	Thana Kristonaggur	1 tank excavated ..	2,000	By Baboo Mohesh Chundra Mukerjee.
	Thana Singoor	1 ditto ...	1,000	By Baboo Shoshee Bhusan Bose.
	Mouzah Nobrna	1 ditto ...	468	
	In different places	11 ditto	1,200	By private individuals, names not furnished.
Nuddea	Not stated	1 ditto	800	
Rajshahye .. .	Ditto	52 ditto ...	Not stated	By zemindars and well-to-do ryots: names not furnished.
Pubna	Government estate Bonbaria in Serajgunge.	10 wells sunk	Ditto.	
	Maltinagar village in thana Raiganj.	1 tank excavated ...	500	By Khandkan Sarofbaks.
	Bakna village	1 ditto .	2,000	By Baboo Bhovrub Chander Tarafdar.
	Not stated	3 tanks re-excavated	Not stated	By the owners, names not furnished.
Faridpore ...	Bramhandi, Mirzapore, Bahadoorpur, Khalia, and Boalia villages.	6 tanks excavated ...	1,100	By private individuals, names not furnished.
	In different places	8 ditto ...	3,144	By the Road Cess Department and villagers.
Patna	Mahomedpur	1 pucca ghât to river	1,000	
Monghyr	Jamui sub-division	5 pucca wells sunk ...	Not stated.	
	Jamui bazar in Jamui sub-division	1 well sunk	Ditto	By Oshruf Bhagut.
	In Jamui sub-division	1 ditto	Ditto	By the Maharajah of Patsanda.
Bhagulpore .	Sudder sub-division	4 wells sunk	Ditto	
Purneah	Not stated	2 tanks and several wells.	4,642	By private individuals, names not furnished.
Maldah	Chanchal Estate and several other villages.	18 tanks excavated ...	13,134	
Sonthal Pergunnahs.	Dumka town	1 pucca well	Not stated	By Mr. Maling Grant, zemindar.
Puri	Mouzah Gopalipara	1 tank excavated ...	200	By Rohas Rowtra
	Ditto Bhobanessur	1 ditto ...	200	By Narayan Panda.
	Ditto Bolegurh	1 ditto ...	100	By Parshuram Dass.
	Ditto Kuspollah, Killa Khorda	1 pucca well sunk .	130	By Bimba Dhur Dass.
	Khorda Government Estate ...	Tanks and wells, number not stated.	Not stated.	

DISPOSAL OF THE DEAD

In Towns.

Burning ghats were provided in the *Baranagore* Municipality in the 24-Pergunnahs; back wall of the burning ghat at *Narainganje* in Dacca was raised; the construction of two godowns at the two burning ghats in *Bhagulpore* are in progress.

MARKETS AND SLAUGHTER-HOUSES

In Towns.

Markets.

The construction of the Chandai market in *Tumlook* in Midnapore, and a covered market in Darjiling are in progress. Improvements were effected to the Nuxulbari hat, the Garidhura bazar, and the Panighutta bazar in *Darjiling*. Buildings for the two bazars in *Aurungabad* in Gya; a wall for the compound of Gudree bazar in *Mozufferpore*; additional sheds to the market at *Madhubani* in Durbhunga; an iron-roofed market in *Dumka* in Sonthal Pergunnahs; and a range of shops and a shed for vegetable sellers at the market in *Purulia* were constructed. A commodious and substantial shed for the local market at *Manbhum* was put up by the zemindar of Jharia.

Slaughter-houses.

Wooden tables and blocks for cutting meat have been provided in the *Darjiling* slaughter-house. A pucca bone-pit at Malnachuck slaughter-house and new slaughter-houses at Hossainabad and Mirzatolla in *Bhagulpore* were constructed. The laying of stones on the floor of the Dobundha slaughter-house in *Cuttack* is in progress.

PROTECTION TO TRAVELLERS

In Towns.

A resting-house for travellers was constructed at *Silliguri* in Julpaiguri.

MEDICAL RELIEF

In Towns.

A cookshed for the indoor-patients at the *Tumluk* dispensary in Midnapore was constructed. Additions were made to the dispensaries at *Serampore* and *Barriepore*—the former in Hughli and the latter in 24-Pergunnahs district. One cook-house for the dispensary and one bungalow for the compounder were provided in *Dinajpur*. Cholera and small-pox sheds were constructed, and improvements made to the *Silliguri* dispensary in Julpaiguri. An outdoor dispensary in Nuxulbari in *Darjiling* was constructed. A cook-room for the dispensary at *Behar* in Patna was provided. An out-house in the dispensary and a house for the Assistant Surgeon were constructed in *Sasseram* in Shahabad. The latter is in progress. A shed for cholera patients in *Durbhunga* town and a cook-room and privy at the dispensary at *Roserah* in the Durbhunga district were constructed. A dispensary building in *Kissengunge* in Purneah is in progress.

The 25th June 1885.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

APPENDIX No. IV.

ABSTRACTS OF INSPECTION REPORTS ON TOWNS VISITED IN 1884.

Abstracts of Inspection Reports on Towns visited in 1884.

Soori.—*Inspected in January.*—The sanitary condition of this town was found to be very unsatisfactory, particularly in connection with conservancy, drainage and water-supply, and it appeared that very little progress had been made in improving its status since it was last inspected.

The recommendations were—(1) To allot a larger proportion than 3·7 per cent. of the income for the rectification of sanitary defects. (2) To administer the sanitary clauses of the municipal laws with greater closeness and activity than was being done. (3) To provide culverts to some of the village roads. (4) To prevent future encroachments over drains which were being made, although the existing encroachments (which were extensive) could not be removed, owing to no legal power to do so being conferred by the Municipal Act. (5) To lose no further time in undertaking to complete the long contemplated proposal of providing the town with a regular system of drainage with proper outfalls, as the existing drains were very faulty, and could not, from various causes, be kept in effectual working order. (6) To discontinue the present very objectionable mode of disposing the sweepings, conveying them outside the Municipality to be buried and left on the fields to rot for manure. (7) To treat similarly the litter and filth in the backs of houses, using wheelbarrows for their removal. (8) To have the slop and refuse water from houses collected in properly arranged gumlahs or catch-pans and removed in pails by the municipal mehters instead of permitting them to form unhealthy and unsightly nuisances. (9) To lower, if possible, the walls of the public latrines, as their being too high renders ventilation insufficient. (10) To provide each cell of the latrines with two tarred gumlahs, one for fœces and the other for urine and washings. (11) To keep the masonry work in the latrines in proper repair. (12) To provide conveniently situated additional public latrines, accessible to the people, in every part of the town, in the event of Major Ramsay's portable latrines (one of which is to be tried experimentally) not working satisfactorily. (13) To keep all public latrines scrupulously clean. (14) To induce the people to provide themselves with properly constructed latrines provided with gumlahs in place of the hollows in the ground which constitute the present latrines to the detriment of health. (15) To bury night-soil in shallow trenches one foot deep by one foot wide and cover it daily with earth instead of throwing it out of town, as it is not fair that the town should be relieved of one of its sources of sickness at the expense of the people living beyond its limits. (16) To provide a proper night-soil trenching ground. (17) To adequately strengthen the establishment and to provide additional carts, in order that the conservancy arrangements may be effectually carried out. (18) To properly trap the inlet to the tank reserved for drinking purposes, and to remove to another spot the school latrine, which is within six paces of this tank. (19) To sink a few wells in open spaces on fresh ground (not on old sites of houses) in the native quarter of the town. (20) To induce the owners to keep their wells in wholesome condition. (21) To close the Native Christian burial-ground, which is too near a jail tank from which drinking water is taken, and to open out another on a site further away from human habitations. (22) To cause the graves to be dug deeper than three-and-a-half feet, the graves of the Christians being dug six feet deep and those of the Mahomedans seven feet, as the latter generally place a bamboo or mat machan or roof over the body, which should be not less than four feet below the surface of the ground. (23) To establish proper burning grounds for the Hindus instead of permitting them to cremate their dead wherever they choose outside the Municipality. (24) To improve registration generally.

Action taken on the suggestions.—The night-soil trenching ground was selected as the most suitable site for removing the street sweepings to. It was considered impracticable and beyond the means of the Municipality to remove slop water in buckets, but it was decided to take measures to prevent its remaining stagnant. It was resolved to have the gumlahs and masonry of the public latrines tarred once a week, and that the sweepers should be held responsible for the proper use of the latrines. The proposition to lower the walls of the latrines by one foot to admit of ventilation was considered not feasible, as in this case the thatched roofs, which would have to be supported by bamboo props, may not weather strong gales; it was, consequently, decided to bore holes in the walls. It was considered impracticable to remove dung heaps from the town, on the grounds that the people, mostly agriculturists, would suffer loss by this measure, and the undertaking would be too costly to the Municipality. It was agreed to provide an additional cart, bullocks and an extra sweeper for the removal of stable litter. The question of undertaking the cleaning of private latrines and the remaining suggestion made in the Inspection Report were postponed for future consideration.

Sahibgunge.—*Inspected in January.*—This town was constituted a Municipality only two years ago, and owing to its favourable position it has become a large depôt for the exchange of traffic between the river and the rail. Its condition is not satisfactory; but the allotment last year of over 24 per cent. of the income for original sanitary works affords clear evidence that the sanitary welfare of the town is receiving commendable attention from the Commissioners. The drainage is being gradually improved.

The suggestions were—(1) To introduce at once those parts of the Municipal Act which provide for municipal taxation and contain important sanitary regulations, together with a revised Code of bye-laws. (2) To have the kutcha roads gradually metalled; (3) To remove some of the houses from the crowded portion of the town and to plant trees along the road sides. (4) To extend, as soon as possible, to the whole town the system of pucca shallow drains, which is most important in a sanitary point of view. (5) To persevere systematically with the filling up of unwholesome excavations, as they threaten to be a nuisance. (6) Not to permit the portable latrine to remain stationary as it tends to frustrate the purpose for which it was designed. It should be removed to a field behind the bazar and constantly moved on over trenches to be regularly dug and filled in. (7) To provide more latrines of a similar description, running on rails in the bazar, the neighbourhood of the market and in the cooly village to the south end of the Municipality, in which places they would prove very useful. (8) To provide ordinary latrines in places where the above kind of latrine cannot be used, so that promiscuous defœcation in the town by those who have no privies of their own may be effectually stopped. (9) To provide latrines for the exclusive use of females and to employ mehtranis only for these latrines. (10) To suppress entirely the sundasses or well-privies, notwithstanding that they are enclosed by walls and provided with roofs, as these arrangements do not prevent their being abominable nuisances, inasmuch as the filth in them being always in a state of fermentation, pollutes the air by evolving poisonous gases. (11) To induce the owners of those well-privies to provide themselves with properly constructed surface privies from which the night-soil could be properly and easily removed. (12) To introduce the system of having the private privies cleaned by municipal mehters, levying a fee for the service rendered, as experience everywhere shows that the employment of private mehters for this work has never proved satisfactory. (13) To instruct the police to detect those who commit nuisances about the town and have them prosecuted. (14) To bring into operation Part IX of the Municipal Act. (15) To establish under proper arrangements a municipal market and a slaughter-house. (16) To have some of the tanks re-excavated and reserved for drinking purposes. (17) To consider the advisability of establishing a charitable dispensary in the town, to be maintained by general subscription, as the need for it is specially indicated in this rising town. (18) To introduce Act IV (B.C.) of 1873, rendering the registration of births and deaths compulsory, and to have a separate record of the events kept and returns furnished to this office.

Action taken on the suggestions.—It was reported that the recommendations relating to latrines, water-supply and medical relief, to carry out which there are no funds at present, will be gradually given effect to.

Berhampore.—*Inspected in January.*—This Municipality was found to wear a better appearance in a sanitary point of view than when last inspected, and it was evident that the Vice-Chairman took an active and intelligent interest in its affairs. Many improvements were found to have been effected, the chief being the division of the town into wards and allotting them to the Commissioners for the purpose of their sanitary concerns being better looked after with the Vice-Chairman's active assistance; the strengthening of the conservancy establishment; the metalling of the roads; the proper utilization of the street sweepings; the improvement of the drainage; the better care and supervision of the latrines; the better trenching of night-soil and the providing of additional trenching grounds; the fixing of burning ghats at selected sites on the banks of the river; the appointment of two mohurirs to look after registration.

The recommendations were—(1) To remove the encroachments over the drains. (2) To use two gumlahs, one for fœces and the other for urine and washings, in each cell of the latrines and to tar them periodically. (3) To introduce experimentally Major Ramsay's land-manuring privies. (4) To prohibit the mehters to perform work on their own account. (5) To suppress well-privies which were supposed to exist. (6) To trench the night-soil properly and systematically, avoiding nuisance and offensiveness, so that native gentlemen may not be deterred from lending their gardens for trenching grounds (7) To extend the house-scavenging system, so that the cleansing of the remainder of the private privies might be undertaken by the municipal mehters. (8) To import mehters if they cannot be procured locally. (9) To clean the public and private privies twice a day instead of once. (10) To cause the floors of the two private slaughter-houses to be repaired and that of Rani Surnomoy's bazar cemented. (11) To close the Christian burial-ground against further interments, as it is crowded, and to burn the clothes and pillows of the Hindu dead instead of burying them in the dry bed of the river. (12) To fully utilize the provisions of the Compulsory Registration Act, and to adopt means to improve registration generally.

Action taken on the suggestions.—It was reported (1) That two gumlahs had been provided for each cell in the public latrines, which will be tarred periodically. (2) That one of Major Ramsay's moveable privies had been purchased, but that it is not much resorted to by the people. (3) That the mehters have been prohibited to do private work on their own account. (4) That every endeavour is made to suppress well-privies and improperly constructed privies. (5) That the system of trenching night-soil has been improved, in accordance with suggestions. (6) That additional mehters have been imported from the Sonthal Pergunnahs. (7) That every endeavour is being made to overcome the objection of the people to have their privies cleaned by Municipal mehters, and that for this purpose it is proposed to introduce Part IX of Act III of 1884 bearing on this subject.

Lalbagh or City Moorshidabad.—*Inspected in January.*—Although there is yet much to be done before the sanitary condition of this town can be pronounced to be satisfactory, there was evidence at my visit to show that the Commissioners were bestowing commendable interest on its sanitary welfare. A scheme, on an extensive scale, for remedying its defective drainage had been commenced. A fairly large tank had been excavated for the benefit of the people at Shahanagore, and a very unwholesome tank filled up. Additional public latrines and night-soil carts had been provided. The private graveyards had been reduced from 53 to 14, and the latter enclosed and registered. Two sites, 44 bighas in extent, were selected for the establishment of Municipal burial-grounds, and steps taken for acquiring the land under the Act. The large number of burning sites had been reduced to 7 public and 6 private ones, and these registered and placed in charge of Municipal domes.

The suggestions were—(1) To allot a larger share of the income for sanitary works, as the present apportionment, viz., about 15 per cent. of the income, did not appear to be an equitable one, considering that the income of the town is a large one and over Rs. 10,000 per annum has been set free by the Municipality having been relieved of police charges. (2) To fill up the excavations and the numerous unhealthy hollows, and to uproot the jungle abounding about the town. (3) To bring the drainage scheme to speedy completion, and to reconsider the arrangements connected with the Azimgunge drainage scheme, which is still very defective, as the outlet is non-effective and the passage of surface water and kitchen washings is impeded by an obstructed drain. (4) To prohibit the mehters to perform private work on their own account. (5) To prevent the heaping up of street sweepings and the promiscuous disposal of house refuse, and to utilize them systematically in filling up excavations, &c. (6) To provide a sufficient number of private latrines, particularly one at Baluchar, as the present number affects only one-fourth of the town; to afford more ventilation to the latrine at Lalbagh; and to cement the floors of the mat ones. (7) To dig the trenches only one foot wide by one foot deep, and to put in them only so much night-soil as will preclude its re-appearance on fermentation. (8) To suppress the sundasses or well-privies. (9) To have the private privies cleaned by Municipal mehters. (10) To provide a well-arranged slaughter-house and suitable places for the sale of meat, so that the objectionable butchers' shops about the town may be done away with, and, pending the carrying out of these arrangements, to properly drain the existing slaughter-houses, have their floors paved, and provide them with water. (11) With regard to the recently excavated tank near the thana and the well at Mongultoli, to remove the foul water before the rains set in and to make arrangements for protecting both tank and well from every pollution. (12) To prevent effectually the practice of defæcating on the banks of the ghats on the river. (13) To suppress entirely interments within the enclosures of houses as soon as the proposed burial-grounds have been established. (14) To utilize the provisions of the Compulsory Registration Act with full vigour, and to improve registration generally.

Action taken on the suggestions.—About five miles of the main road have been repaired. The Bhubantuli road, the side drains of which are dangerous, have been railed all throughout. The Katgola road-side drains are being filled up. The beds of the hollows within a short distance of the drains are being raised with street sweepings. The jungle on Municipal land, specially by the side of the drains, has been removed, and 119 notices been served on owners to remove jungle from their land. The drains at Azimgunge have been completed. Two thatched latrines have been constructed at Baluchar, and a pucca one is under construction; 14 holes have been made in the two sets of latrines for ventilation. Estimates of the cost have been framed for the construction of the Baluchar-Kannaiputti drain, and for the conversion of the Jamuleegurrah into a tank. The tank near Shahanagore has been cleaned and filled with river water and set aside for drinking purposes The Compulsory Registration Act is being fully utilized with the view of improving registration.

English Bazar Municipality.—*Inspected in January* 1884—Some reforms had been effected since this Municipality was last inspected, but very grave defects requiring urgent rectification yet exist.

Suggestions offered.—(1) To gradually fill up with street sweepings and rubbish the many hollows and disused tanks about the town, instead of accumulating them all over it, and to execute this work systematically, filling up one hole or excavation at a time and completing it before taking another in hand. (2) To prevent the further digging of holes and deepening of large excavations. (3) In constructing drains in future, to adopt shallow saucer-shaped ones, as notwithstanding several improvements that had been made in connection with the existing drains, they were found to be blocked throughout and in some places so deep as to act like elongated cesspools. (4) To strengthen the conservancy establishment, the existing one being quite inadequate for the requirements of the town. (5) To pay the establishment at higher than the present rates, which are not commensurate with the labour required from it. (6) To collect in vessels, for removal, the kitchen and slop water, or allow it to pass into the surface drains, instead of permitting it to form collections all over the town. (7) To remove the dead silk-worms and to construct proper drains in connection with the filatures for the removal of the water used in steeping cocoons, which is full of animal matter which on decomposition is very offensive. (8) To induce the people to collect their cattle dung near their mulberry fields instead of accumulating it in their houses to rot before removing it to the fields. (9) To provide public latrines and to prevent the practice of general defæcation close to houses and elsewhere, suggestions which have been often urged on the Commissioners without effect. (10) Before

providing these conveniences to give a trial to one of Major Ramsay's portable privies which, if successful, will save the cost of constructing public latrines and obviate the necessity of providing ground for trenching the night-soil. (11) To see to the proper cleansing of the private privies, compelling the people to have them attended to daily and prosecuting those who keep them in a filthy condition, or better still causing them to be cleaned by the Municipal mehters under Municipal supervision. (12) To suppress the well-privies, which are suspected to exist yet. (13) To insist on the night-soil from the private latrines being trenched in suitable grounds beyond the limits of the Municipality. (14) As owing to the scarcity of rainfall the tanks were drying up, and, consequently, contained water unfit for any purpose, to take the opportunity of improving as many of them as possible, by having their sides thoroughly cleaned of rubbish, their bottoms scraped to the depth of a foot or more and the *debris* removed, and if water is to be admitted to them from the river, to have the connecting channels carefully cleaned both by removal of rubbish and flushing. (15) Before digging more tanks to consider whether tanks are so useful as to justify the expenditure of much money on them, as they do not appear to retain water on account of the sandy subsoil. (16) To stop without delay interments in the compounds of houses. (17) To provide conveniently situated burial-grounds, as the two existing ones cannot be easily resorted to and kept in good condition, owing to one being in the north of the town and the other six miles away from the station. (18) To prevent the domes appropriating to themselves the clothes and pillows of those who die from infectious diseases. (19) To consider the advisability of dismissing the vaccinator of Mukdompur if he does not improve the quality of his work. (20) To utilize fully the provisions of the Compulsory Registration Act and to improve registration generally.

Action taken on the suggestions.—It was reported that the conservancy establishment had been doubled; that steps had been taken to improve and maintain the drainage and water-supply in all parts of the town, to fill up holes, remove rubbish heaps, to clear away jungle for ventilation, to close offensive privies, and to provide latrines; that constant attention had been enjoined with regard to matters of conservancy and sanitation; that several sanitary works had been executed during 1st April to 31st October 1884 at a cost of Rs. 3,456-12-9; and that a list of more works of this nature had been prepared, some of which were being carried out and the rest were to be taken up as soon as the budget allotments provided for them became available.

Old Maldah.—*Inspected in January.*—This town was found to have maintained the very insanitary conditions of former years, which, added to the waterlogged condition of the place, are said to engender malarious fever and to set free the germs of other diseases, so that many people had deserted their dwellings and trade was in a paralysed state. In fact it appeared that the town was progressing in decay. Want of funds no doubt hampered the Commissioners in effecting any substantial improvement. The drainage was still defective, notwithstanding some improvements that had been made; the conservancy arrangements continued in the same disgraceful condition as seen at the last inspection in February 1881; the arrangements for the disposal of the dead as far as burial was concerned were most objectionable; and the Mahomedans continued to bury their dead in the gardens or in open grounds at a little distance from the dwelling-houses, for want of a public burial-ground.

The suggestions were—(1) To employ systematically in effecting sanitary improvements the saving effected by the Municipality having been relieved of the cost of maintaining the police. (2) To prevent the irregular construction and crowding together of houses without any provision for free ventilation. (3) To remedy as soon as possible the defects in connection with the practice of steeping bamboos and throwing house refuse and filth in the large depressions in the low grounds left between houses that are irregularly built in rows on high strips of land. (4) To strengthen materially the conservancy establishment for keeping the town clean, and to provide one or two rubbish carts. (5) To excavate the large depression between Mokatipur and Farizpur, into which many privies discharge their contents, and which is so blocked that nothing can flow away. (6) To take such levels as will admit of the water from the bath-rooms and kitchens running off. (7) To have the night-soil removed by the householders or by the Municipality at their expense. (8) To rectify, in the manner suggested in the inspection report of August 1879, the grave defects under the head of conservancy. (9) To take better care of the tanks that are reserved for drinking and other domestic purposes. (10) To establish a public burial-ground for the Mahomedans and to close gradually the private burial places. (11) To place vaccination under the supervision of the Civil Hospital Assistant. (12) To fully utilize the provisions of the Compulsory Registration Act IV (B.C.) of 1873, and not to permit it to remain any longer a dead letter; to appoint a person to detect all evasions of the requirements of the law, and have the delinquents punished; and to deal with the constables or chowkidars under section 6 of the Act whenever they omit to report the events occurring in their beats.

Action taken on the suggestions.—The Magistrate reported that the conservancy establishment had been considerably increased, and that he had drawn the attention of the Municipal Commissioners to the sanitary clauses of the bye-laws, which were somewhat overlooked, and to various other matters; and that the Commissioners were anxious to recognize their responsibilities.

Bhagulpore.—*Inspected in January.*— Since this town was last visited much has been done to improve its sanitation, and its present condition contrasts very favourably with its state

a few years back, when very grave defects existed under every head of sanitation. It has the advantage of a good natural drainage; the conservancy arrangements are fairly satisfactory; the project for providing filtered water for the town, the supply being taken from the river Ganges, has been sanctioned by Government, and the work will soon be taken in hand, and completed, it is hoped, in about 14 months; 66 private Mahomedan burial-grounds have been registered; and three sites about 30 bighas in extent have been acquired by the Municipality and set apart for the burial of the Mahomedan dead. All these bear evidence that the Commissioners are not unmindful of the sanitary welfare of the town. But its condition is not yet quite satisfactory. Many defects yet call for rectification.

The suggestions were—(1) To assign a larger portion of the income for improving the sanitation of the town, the present apportionment of about 10 per cent. not being equitable, considering that the large sum of about Rs. 9,000 a year accrues to it owing to its having been relieved of police charges. (2) To consider carefully the question of the irregular laying out and construction of houses without proper provision for ventilation or any drainage arrangement, and to bring into operation those sections of the Municipal Act which relate to "building regulations." (3) To prevent the excavation of holes for taking earth for building purposes. (5) To demolish the deep pucca drain at Soojagunge and have it replaced by shallow surface ones, when the scheme for a complete set of surface drains for Soojagunge, which has received the approval of Government, and for which funds have been supplied to the Public Works Department, is undertaken, and at the same time to demolish the kutcha drains, which are irregular in level in several places. (6) To prevent the practice of throwing the kitchen refuse on roads and elsewhere, having it removed by mehters to the trenching ground. (7) To have the privies which are exposed to public view shut out. (8) To suppress the well-privies and other objectionable description of privies in Moula chuck. (9) To take early steps to extend Part IX of the Municipal Act relating to latrines to the rest of the town. (10) To require Baboo Giridhary Sahoo to have the floor of his market paved. (11) To have the offal and garbage from the slaughter-house buried in the trenching ground instead of throwing them into the Teen Foolka river. (12) To have the floor of the slaughter-houses made pucca and cemented. (13) To have the filtered water-supply scheme, which has been approved by Government, speedily brought to completion. (14) In view of economy of space, to have the graves in the Moula chuck burial-ground dug in rows and not at random, and to make arrangements for the burial of children in a separate row. (15) To have the private graveyards of the Mahomedans closed, as each becomes crowded or falls into decay, since public burial grounds have been provided for them. (16) To take steps to have the village of Rampoora incorporated with the Municipality. (17) To have a registrar attached to the Berari burning ghat, who shall keep a record of corpses brought to it for cremation, as is done in the burning ghats in Calcutta. (18) To prohibit the throwing of half-burnt bodies into the river; to have the Hindu pauper dead cremated at the cost of the Municipality instead of being thrown into the river; and not to allow the domes to take away the clothes and pillows of the dead, which should be burnt. (19) To take steps for the vigorous application of the provisions of the Compulsory Vaccination Act. (20) To exert to the utmost to place registration on a satisfactory footing; to appoint a person to detect and report all evasions of the requirements of the Compulsory Registration law, and to deal with the constables and chowkidars under section 6 of that Act for omission to report births and deaths.

Action taken on the suggestions.—It was reported that several of the suggestions had been adopted, and that the rest were under consideration.

Purneah Municipality.—*Inspected in January.*—Commendable sanitary improvements were found to have been effected in this town since it was last inspected. Sixteen public latrines (8 for males and 8 for females) and one urinal had been erected; night-soil carts provided; saucer-shaped drains on each side of the main streets constructed in the place of the existing square drains, wells and tanks had been cleared, and other improvements had been or were contemplated to be effected. But several serious defects still existed, particularly under the heads of Conservancy and Drainage, which called for urgent reform.

The suggestions were—(1) To metal the kutcha roads, as owing to the sandy nature of the soil they require constant attention. (2) To move Government to have a survey made of the undrained swamps around, and interspersed in, the old station to see if no outlet can be obtained for the vast amount of water stagnating on the surface in bhils or old channels, or whether by connecting these by channels it would not be possible to carry off the water more rapidly and so diminish the evil of the long-continued drying up. (3) To correct certain defects discovered in the new saucer drains above alluded to. (4) To prevent people from allowing sewage from their houses to pass into these drains. (5) To strengthen the conservancy establishment. (6) To carry out surface-cleansing more completely, as at present the streets and drains of only that portion of the Municipality which lies on both sides of the bazar road are attended to. (7) To utilize the street sweepings more systematically than at present, filling up one or two excavations to completion before undertaking the filling up of others. (8) To enquire into the objections of the people to resort to the public latrines, and to make every endeavour to overcome them. (9) To provide more public latrines, but before doing so to give a fair trial to one of Major Ramsay's portable latrine and if it answers the purpose, to introduce an adequate number of them. (10) To have people committing nuisances about town prosecuted, after providing them with trenches dug in the fields at a distance from habitations, pending the provision of public latrines. (11) To

give effect to the law on the subject of latrines, which has been introduced into the town, meeting the difficulty of obtaining mehters locally by importing them from elsewhere. (12) To prevent the spill water from the public wells being dammed up, sinking into the ground, and re-entering the wells, collecting it in troughs if required to water the streets. (13) To induce the owners of the private wells to get rid of the unwholesome water in them. (14) To burn the clothes and pillows of the Hindu dead instead of allowing the domes to appropriate them, as they form vehicles of contagion. (15) To bury dead animals instead of throwing them away. (16) To compel the objectors to submit to vaccination by enforcing in their cases the provisions of the compulsory law. (16) To utilize fully the provisions of the Compulsory Registration Act and to adopt means for the improvement of registration generally.

Action taken on the suggestions.—It was resolved, (1) To direct the Overseer to bring up for punishment all parties committing nuisances. (2) To remedy the defects connected with the city drains, to provide a conservancy cart, and one or more public latrines in Khaganchihat and in the city, and to prosecute those who do not use them. (4) To endeavour again to procure sweepers for the working of the law relating to latrines. (5) To carry out the suggestions regarding the Government and Municipal wells. (6) To adopt measures for the enforcement of the Compulsory Vaccination and Registration Acts.

Burdwan.—*Inspected in February.*—The sanitary arrangements of this town, specially those under the heads of conservancy and water-supply were excellent. There was sufficient evidence to show that the Commissioners were taking commendable interest in improving its sanitation. It is to be regretted, however, that the drainage arrangements were not satisfactory; but it appeared that the Commissioners were not able to undertake a drainage scheme until the water-works scheme then in hand had been completed.

The suggestions were—(1) To bring into operation in this important town all the parts of the new Municipal Act III (B.C.) of 1884, particularly Part IX. (2) Until a proper drainage scheme could be introduced, to bestow more constant attention to the existing drains than is paid to them at present. (3) Not to lose sight of the great necessity of extending the commendable latrine system to the rest of the town not yet supplied with public latrines. (4) To require the police to pay strictest attention to the commission of nuisances about town and to bring up for punishment the offenders. (5) To utilize properly the sweepings of the town in filling up tanks and hollows, and to fill up at once the corner furthest from the Rajbari used as a privy and for casting night-soil. (6) To remedy the defects in connection with the system of trenching night-soil. (7) To open another trenching ground, as the present one is not conveniently situated with reference to the blocks of privies from which night-soil is removed to the trenching ground. (8) To require the owner of the private slaughter-house to keep it clean and in good order. (9) To consider the advisability of establishing a properly constructed slaughter-house. (10) To fill up the foul tanks about the town as expeditiously as possible after the water-works are opened, in order that the full benefits of the excellent filtered water service may be enjoyed by the people. (11) To remedy the defects in connection with the dilapidated condition of the posts and rails of the tank at the entrance of the jail. (12) To discontinue the use of the cemetery attached to Pir Baharim, which is nearly crowded and is situated too much within the town. (13) Not to permit the objectionable practices of cremation on the sands of the river Damuda, and the throwing of dead animals on its banks. (14) To consider whether another vaccinator should not be entertained, as the single vaccinator employed is not sufficient for the requirements of the town. (15) To carry on vaccine operation actively in the cold season in future instead of in the hot weather. (16) To utilize fully the provisions of the Compulsory Registration Act, and to adopt measures for the improvement of registration generally.

Action taken on the suggestions.—It was reported (1) That cleanliness of the drains was being attended to. (2) That the attention of the District Superintendent of Police had been drawn to the subject of putting down promiscuous defœcation. (3) That endeavours were being made to utilize town sweepings in filling holes and hollows in the best way practicable. (4) That suggestions regarding the mode of trenching night-soil had been negatived on the ground that they were found almost impracticable, and that the endeavours to induce people to use night-soil for manuring purposes had failed. (5) That efforts were being made to procure more land for the trenching of night-soil. (6) That suggestion regarding the establishment of a slaughter-house will be taken in hand as soon as funds are available. (7) That with regard to the recommendations about the disposal of the dead, the Commissioners intend to take the matter in hand very soon.

Patna.—*Inspected in February.*—The sanitary condition of this large town was not satisfactory, and many reforms were called for in it. The drainage was more or less defective, but a beginning had been made for providing most of the roads with pucca saucer drains, and endeavours were being made to improve otherwise matters in this direction. The arrangements regarding conservancy and supply of drinking water, as far as public wells are concerned, were very unsatisfactory. Some of the arrangements for the disposal of the dead were most objectionable, and no improvement had been effected in this direction since the last inspection in 1883. There was not a single public burial-ground either for Mahomedans or Christians.

The suggestions were—(1) To devote, for improving the sanitary status of the town, in addition to the share of the income to which sanitation is entitled, the major portion of the

amount set free by the Municipality having been relieved of police charges, which amounted to over Rs. 26,000 per annum, and to utilize a portion of the unnecessarily large closing balances for the same purpose. (2) To display more activity and closeness in administering the sanitary clauses of the municipal laws and bye-laws, so that the sanitary welfare of the town may be materially benefited. (3) To have the city dispensary thoroughly repaired. (4) To put a stop to the practice of taking earth from the old town moat for brick and tile making, the result of this procedure being that there is now running through the town an immense ditch made up of deep detached holes, which are full of stagnant water. (5) To bring to speedy completion the work of providing the roads with pucca saucer drains and to make a proper survey of all those mohullahs which cannot be drained as easily as Mirzaigunge, owing to difficulties connected with outfall, in order to ascertain in which direction the surface drainage should be carried, so that it may find exit at all seasons. (6) To remedy the defects connected with the new saucer drains above alluded to, as the connection between the bath-rooms and the drains is rather imperfect, the result being that soakage occurs close to the walls of the houses. (7) To prohibit the conservancy staff from performing private work on their own account. (8) To provide more public latrines at convenient places, and the present ones with gumlahs for washings in order to obviate the spilling of water, which makes the floor wet and does away with the beneficial effect of the dry-earth system. (9) To take steps to suppress the well privies without delay. (10) To extend the Act relating to latrines to all those parts of the town where it is not in force. (11) To strengthen the conservancy estabshment generally, as the present staff is found to be insufficient for the requirements of the town. (12) To take up more ground for trenching the night-soil. (13) To conduct the trenching system on a better and less objectionable plan than that at present followed. (14) To cultivate regularly the trenching grounds. (15) To introduce Major Ramsay's land-manuring latrines on lands that are regularly cultivated, otherwise the scheme will lead to a further deterioration of the site of the town. (16) To establish two Municipal slaughter-houses. (17) To take early steps to prevent the practice of throwing dead bodies into the river. (18) To establish a general burial-ground in order to do away gradually with the numerous (525) most objectionable private burial places within the compounds of houses. (19) To have the pauper dead buried at the cost of the municipality and not thrown away, as is at present done, a pernicious and barbarous practice. (20) To take steps to prevent partially cremated bodies being cast into the river. (21) To bring into operation the Compulsory Vaccination Act, and to endeavour to find out the ex-inoculators who practice inoculation, who should, whenever detected, be prosecuted and their vaccination licenses revoked. (22) To pay particular attention to remedying the grave defects in connection with the registration of births and deaths. (23) To extend to the whole district the beat system, under which constables or chowkidars are held responsible for reporting all births and deaths occurring in their beats, and to make proper arrangements for the supervision of the work. (24) To fully utilize in the town the provisions of the Compulsory Registration Act, to appoint a person specially to detect all evasions of the provisions of this law, and to apply to the chowkidars and constables section 6 thereof for omitting to report the events occurring in their beats.

Action taken on suggestions.—It was reported (1) that brick-making in the city moat has been stopped; (2) that additional land south of the trenching ground at Ranipur, had been rented and brought into use; (3) that burning of night-soil near the Kowa Khoh has been stopped, the night-soil being carted to Sharifganj and trenched there; (4) that additional Ramsay's latrines had been provided, new trenching grounds for them taken up, and that, when manured, the grounds are to be handed over for cultivation; (5) that arrangements had been made to close the sundasses whenever they can be replaced by public latrines or privies served by Municipal mehters, and that no new wells will be allowed to be excavated near sundasses in private dwellings or elsewhere; (6) that the employment of Municipal servants by private persons has been prohibited; (7) that four new public latrines are to be constructed as soon as the required land for this purpose can be acquired.

Gya.—*Inspected in February.*—The sanitary status of this town had not, it was observed in any way improved since it was last visited in January 1881. There was the fullest evidence of complete neglect in every department of sanitation. The establishment maintained for sanitary purposes was very badly worked, and perfunctory performance of duty was only too manifest. The want of almost all supervision over conservancy was what struck me most, everything being mismanaged or neglected.

The suggestions were—(1) To devote annually an adequate share of the income for improving the sanitation of the town. (2) To administer vigorously the sanitary clauses of the Municipal law and bye-laws. (3) To put a stop to the destruction and causing of damage to the peepul trees on the roadside of the station. (4) To see that the drains are made effective for their purpose, and to prohibit encroachments over, and deposits on the kutcha ones, which cause obstruction and involve heavy expenditure for repairs. (5) To push on to a conclusion, as quickly as possible, the inquiry into the objections raised against the new drainage scheme being taken in hand. (6) To curtail as much as possible the system of covered sewers in the old town, and to substitute for the present ones in the most narrow lanes central pucca drains. (7) To take precautions with regard to the circumstance that in some instances in constructing the new open side drains the ends of the old covered ones have been blocked so as to leave no outlet, which will soon lead to a number of intolerable nuisances. (8) To take steps for the prevention of night-soil finding its way directly from

houses into the drains, and for its removal by other means. (9) To make the conservancy establishment perform their duties efficiently and fully, and to compel the supervising staff to closely watch the under-men and see that they do so. (10) To frame a set of rules providing for the efficient maintenance of general conservancy, the proper cleansing of latrines, both public and private, and for the punishment of delinquents for neglect, remissness, evasions of duty, &c., and to hold the Secretary responsible for the proper observance of the rules. (11) To prohibit the conservancy staff from performing private work on their own account. (12) To have the lanes and bye-paths swept and cleaned, wheel barrows being used where carts cannot obtain entry. (13) To dispose of and utilize properly street sweepings, rubbish, &c., only such a number of excavations or hollows being taken up at one time to fill up which there are sufficient sweepings. (14) To have the sweepings, &c, of the old town removed in hand-barrows and placed in the bed of the Kharwa nullah. (15) To take steps to have house and kitchen refuse, fluid and solid, and the refuse from the rear of houses buried, in the trenching ground. (16) To have the private latrines more carefully looked after, properly managed, and kept thoroughly clean. (17) To provide two gumlahs for each cell in every latrine, one for fœces and the other for washings, and to have the gumlah for fœces charged with dry earth, which should be kept in the cells conveniently at hand. (18) To select other sites than the dry bed of the river Phalgoo for temporary latrines. (19) To provide more public latrines, particularly in localities where there are none, but giving a trial to one of Major Ramsay's patent portable latrines, before constructing them. (20) To compel those who have no private privies of their own to use the public ones, so that the abominable practice of defœcating all over the town might be effectually stopped. (21) To have the latrines for the use of the females entirely separate from those for males. (22) To re-introduce the Latrine Act (now Part IX of the Municipal Act of 1884), and to enforce its provisions vigorously and in the manner in which they are worked in other towns, particularly in Howrah and Serampore. (23) To induce the people to give up their roof and verandah privies, as they will always object to the Municipal servants having access to them, and in their stead to construct privies on the ground floor on arched recesses, sufficiently roomy for the reception of the gumlahs, for the entry of mehters to remove them, and for the Municipal servants to see to the cleanliness of the privies. (24) To carry out the system of trenching night-soil more properly than it is at present done, adopting for this purpose the plan followed in Monghyr. (25) To make the police detect the commission of nuisances in houses or about the town, and prosecute all offenders. (26) To stop the objectionable practice of resorting to the river for purposes of nature, providing a properly constructed latrine on its bank. (27) To take steps to remedy the evil in connection with the conservancy of the market called Purana Godown, arising from the narrow streets of the market being blocked from early morning by carts and bullocks. (28) To put a stop to the objectionable practice of burying the bones from the private slaughter-house in pits close to it. (29) To prevent the practice (due to the want of a piece of piping) of transferring water after it had been pumped up from one of the public wells, to the watering carts by men with gurrahs, which process simply doubles expense. (30) To take steps to close the the Mahomedan burial-ground, which is crowded, and to provide one if the Mahomedan community are unable to establish any for themselves by subscriptions. (31) Not to permit the burial of the Mahomedan pauper dead in the dry bed of the river Phalgoo. (32) To put a stop to the practice of burying in places other than the burial-ground, and to cause the dead to be buried at a greater depth than four to five feet to admit of the chupper which is usually placed over the body being not less than four feet below the surface level. (33) To put a stop to the objectionable practice of cremating bodies in the dry bed of the river Phalgoo, to appoint ghats on its banks for the purpose, to limit all cremation to them, and to prevent the practice of throwing dead bodies of men and animals into the river. (34) To fully utilize the provisions of the Compulsory Registration Act, and to adopt measures for the improvement of registration generally.

Action taken on the suggestions.—(1) Measures have been adopted for the proper conservancy of the town; for the daily sweeping of the streets, roads and lanes; and for properly utilizing the sweepings and rubbish in filling up ditches and hollows. (2) Provision will be made in the next budget for a number of wheel barrows. (3) Arrangements have been made for the proper supervision of the conservancy establishment. (4) Arrangements will also be made for providing a separate gumlah in each cell of the public latrines for the washings. (5) A trial is being given to two of Major Ramsay's patent portable latrines. (6) Regarding the suggestion that police officers should be made to detect all offenders committing nuisances about the town, the Commissioners are of opinion that this is very much needed. (7) Arrangements have been made for having the female latrines separate from those for males, by constructing a partition wall separating the male and female compartments of the present public latrines. (8) Arrangements have also been made for carrying out the system of trenching night-soil in a proper and inoffensive way. (9) Regarding the suggestion to keep the private privies clean and sweet, the Commissioners say that, although the Latrine Act was not in force, the private mehters and mehtranis have been brought under the control of the Municipality since the introduction of a new trenching system, and that they have been conveying all night-soil to the trenching grounds. (10) They are also of opinion that to remedy the evil concerning the defective construction and to provide for the cleaning of the private privies, there should be a bye-law compelling all owners or occupiers to remodel the shape of their privies and to provide such privies as

have been recommended by the Sanitary Commissioner, and that the introduction of the Latrine Act and the enforcement of its provisions are absolutely necessary. (11) Regarding the suggestion about the streets in the market called Purana Godown being blocked from early morning by carts and bullocks, thereby precluding the conservancy of the place being attended to, steps in the way of prosecutions have been taken to remove the evil. (12) The owner of the private slaughter-house has been ordered to put a stop to the burying of the bones in pits close to houses. (13) The Commissioners are of opinion that a new burial-ground for the Mahomedans is urgently needed, as the present one is much crowded, and that a new place should be selected and provided for; and that with regard to the suggestion to provide burning ghats on the banks of the river and prohibit cremation in the dry bed of the stream, some convenient ghats for the cremation of the Hindu dead on the banks of the river should be selected.

Arrah.—*Inspected in February.*—Many sanitary defects were found in this town in urgent need of rectification. The drainage arrangements were very defective, and very little improvement had been effected with regard to conservancy since the town was last visited: in fact the arrangements under this head were still very unsatisfactory. Attempts were being made to improve the water-supply, and for this purpose a channel was being cut for introducing canal water into some of the principal tanks. There was evidence, on the whole, indicating that the Commissioners were not taking sufficient interest in the sanitary welfare of the town; but the great obstacle to progress in sanitation was said to be want of funds.

The suggestions were—(1) To give earnest attention to the means by which funds may be forthcoming, as they are urgently needed for the correction of defects under several heads of sanitation. (2) To devote annually a legitimate share of the income in improving the sanitation of the town, agreeably to the orders of Government on the subject when relieving the Municipality of police charges. (3) To attend to the observations on the subject of introducing the Latrine Act (now Part IX of the Bengal Municipal Act, 1884) made in the last Inspection Report. (4) To prohibit strictly the making of excavations for taking earth for building purposes, and to fill up the present ones as fast as practicable. (5) Pending the carrying out of the contemplated scheme of substituting pucca drains for the present kutcha ones, to endeavour to keep the latter in proper working order. (6) In carrying out this scheme to attend to the other defects noticed under head drainage, and to have saucer-shaped drains, connecting them with the houses, so that they may carry off the bath and slop water. (8) To increase adequately the conservancy establishment, so that the entire requirements of the town may be efficiently attended to. (9) To utilize the street sweepings, &c., in filling up hollows *within* the town and not those that are *out* of town. (10) To have the lanes and the outlying portions of the Municipality regularly swept. (11) To give a trial to Major Ramsay's portable latrines before constructing the ordinary ones. (12 To provide more public latrines, particularly for males, and in constructing them to consider the advisability of having them made of corrugated iron, which are cheaper and easily kept clean. (13) To have the drains and the walls of the public latrines to the height of three feet from the floor tarred periodically. (14) To put down promiscuous defœcation, and to make the police arrest and bring up the offenders for punishment, and until more private latrines are supplied, to provide trench latrines in appropriate places for those who have no privies of their own. (15) To manage the school latrine properly and to provide it with gumlahs. (16) To replace the present covered urinals by curved sheets of tarred iron partially surrounding pucca drains leading to pucca receptacles holding buckets. (17) To carry out the system of trenching night-soil properly, and to try to induce the cultivators to lend for trenching purposes their lands, situated near public latrines, when they go out of cultivation. (18) Not to give up the suppression of the well-privies, as they are abominable nuisances, and to induce their owners to provide themselves with properly constructed surface privies. (19) To have the private privies cleaned by the Municipal mehters under Municipal control. (20) To have the flooring of the Municipal slaughter-house properly cemented, to prevent soakage, and to levy a fee for slaughtering cattle in it, so that the initial and current expenditure incurred may be recouped. (21) To consider the suggestion of the Civil Surgeon to construct a new pucca meat market. (22) To construct catch water drains around the remaining private and public wells. (23) To give effect to the recommendation of the Civil Surgeon to provide all public wells with pumps worked by *bhisters* of proper caste and with service reservoirs with taps from which people might take their water. (24) To consider the suggestions made in the last Inspection Report under the head of water-supply. (25) To induce the Mahomedans to dig the graves for their dead six feet deep, so that the chupper usually placed over the corpse may lie at least four feet from the ground surface. (26) To enquire whether interments are carried on within the enclosures of houses, and, if the practice is found to exist, to forbid it. (27) To encourage the trade in firewood from the hills in the south of the district through the canals and the Sone river, so that the great scarcity of fuel for the burning of corpses may be obviated. (28) To bring into operation the Compulsory Vaccination Act. (29) To take into consideration the subject of providing accommodation for the houseless poor and the aged, as soon as funds are available. (30) To carry out the sanitary arrangements needed in the Opium weighing sheds, particularly with respect to drainage and latrines. (31) To attend to the insanitary condition of the Aburpool, Milkie, Puckrie, and Anaith bustees or mohullahs, arising from the houses being low-built, ill-ventilated, and very much crowded. (32) To utilize fully the provisions of the Compulsory Registration Act, and to adopt measures for the improvement of registration generally.

Action taken on the suggestions.—(1) It was reported that the suggestions regarding the introduction of the Latrine Act will be laid before the next meeting of the Municipal Commissioners. (2) That four more latrines will be constructed on appropriate sites, and a reminder will be sent to the Collector with regard to taking steps for the final acquisition of land required for the purpose. (3) That two more sites suitable for the employment of Major Ramsay's moveable latrines will be selected, and the Collector will be moved to acquire the land chosen for the purpose. (4) That licenses for private markets will not be granted unless the provisions of section 306 of the Municipal Act be strictly complied with. (5) That in future no license will be granted for lime or brick-kilns unless they are situated on free and open spaces, and, as far as possible, without the Municipal limits. (6) That certain public wells will be set apart for drinking purposes only, and that bathing or washing clothes on or near the platforms surrounding the wells will be strictly prohibited. (7) That sloping platforms for carrying off surface water will be made or repaired in the case of each of the wells so reserved for drinking purposes. (8) That the suggestion regarding the introduction of the Compulsory Vaccination Act will be laid before the Commissioners at their next meeting. (9) That the provisions of the Compulsory Registration Act will be, as far as possible, promulgated among the inhabitants and utilized by the authorities.

Mozufferpore.—*Inspected in February.*—The sanitary arrangements of this town were not found quite satisfactory, many grave sanitary defects still existing, particularly under the heads of conservancy, water-supply, and drainage. With regard to the last, however, levels were being taken with the view to improve it.

The suggestions were:—(1) To endeavour to have the revenue of the Municipality increased by raising taxation, as the incidence of income to population is lower than in several other Municipalities containing an equal or even a smaller population. (2) To assign annually, for sanitary improvements, a legitimate portion of the income of the town, as well as the major share of the amount set free by the Municipality having been relieved of police charges. (3) To provide gradually all the principal streets with pucca saucer drains, and to connect them with wells and the bath-rooms of houses to carry off spill and bath-water. (4) To prevent further encroachments over drains, as the passages under them are used for casting rubbish, &c., which cause obstructions to the drains. (5) To require all persons wishing to have a way made for entry into their houses to provide drain pipes of sufficient size to allow free passage of water through the drains beneath, instead of filling them up with earth. (6) Not to allow the house drains into which kitchen refuse, &c., are cast to empty themselves into cesspools close to houses (7) To consider the question of increasing the pay of the conservancy establishment, as their present allowances are insufficient, leading them to perform their work perfunctorily. (8) To have all the roads and lanes swept daily and to provide more carts for removing the sweepings, &c., hand-barrows being used in those lanes to which the carts cannot have access. (9) To provide more latrines, specially in mohullahs Chandwara and Sadparah, where there are none. (10) To have the latrines for females entirely separate from those for males, and to appoint mehtranis only to attend to them. (11) In constructing latrines in future to avoid the high cost which was incurred in building the existing ones. (12) To bring into use experimentally one or two of Major Ramsay's portable latrines, as they have been proved to be very useful, comparatively less expensive, and more suited to the habits of the people than the regular latrines, and to consider the advisability of bringing into use the new corrugated iron latrines, Hornbury's patent, sold by Messrs. Burn & Co., placing them on properly cemented platforms. (13) To have the seats and drains of all the public latrines made of the best pucca masonry plastered with Portland cement. To prevent the soakage to which they are at present subjected. (14) To have the drains and walls of the latrines periodically tarred; the latter up to three feet high. (15) To provide all the latrines with pucca washing places outside and to direct the people to use them, so that the dry-earth system can be carried out properly. (16) To rectify the defects existing at No. 1, Municipal market latrine. (17) To have the private privies attended to by Municipal mehters under Municipal control, and to bring into operation Part IX of Act III (B.C.) of 1884. (18) To suppress at once the remaining well-privies. (19) To strictly prohibit promiscuous defæcation as soon as a sufficient number of latrines is provided. (20) To open some more trenching grounds, as the present ones are not conveniently situated with reference to the night-soil depôts, and to induce owners of fields in proximity to latrines to make them over to be manured. (21) To provide a latrine for the Municipal market, and to require the owners of the private markets to do the same, and also to rectify the defects noticed with regard to them. (22) To consider the question of establishing a properly constructed Municipal slaughter-house, with all the needful appliances for carrying on the work. (23) To build a pucca connection between the Gunduck river and the larger tanks which are resorted to for drinking purposes. (24) To have the broken parapets of some of the public wells repaired. (25) To supply the wells, as well as the large tank in front of the Municipal shed, with pumps to enable the people to raise water from the former, and to fill the water-carts from the latter. (26) Not to permit the domes to appropriate to themselves the clothes and pillows of the Hindu dead, as they form potent vehicles for the spread of contagious diseases. (27) To bring into operation the Compulsory Vaccination Act. (28) To adopt the hath-chitti or hand-book system in every registering circle of the district, and to institute inquiries systematically regarding the occurrence of deaths in the villages, and to compare the information gathered with the entries in the registers kept at the registering

circles. (29) To fully utilize the provisions of the Compulsory Registration Act IV (B.C.) of 1873; to appoint a person specially to detect all evasions of the requirements of this law and to report the delinquents, and to apply the provisions of section 6 of the Act to the chowkidars and constables whenever they omit to report the events occurring in their beats. (30) To pay earnest attention to the observations and suggestions for the improvement of the sanitary condition of Mozufferpore made by Mr. Hughes, Officiating Superintending Engineer, Sone Circle.

Durbhanga.—*Inspected in February.*—Many improvements were found to have been effected in this town since it was last inspected, and, considering the large extent of ground covered by it, its sanitation seemed to be well cared for. Some progress had been made in the drainage arrangements; and the conservancy establishment considerably strengthened; two burial grounds provided for the Mahomedans, and a Sub-committee appointed to report on the question of closing the numerous private burial places

The suggestions were—(1) To allot an equitable share of the income for improving the sanitation of the town, particularly as nearly Rs. 8,000 per annum had become available by the Municipality having been relieved of police charges. (2) Not to lose sight of the question of thoroughly draining the town, which has been long under consideration, as a general and effectual system of drainage is evidently very much required. (3) Not to permit excavations to be made in the drains, and to require persons wishing to have earth roads made for entry into their houses to provide drain pipes to the drains for the passage of water. (4) To further strengthen the establishment, so that conservancy may be effectually attended to. (5) To provide more public latrines. (6) In building latrines in future to adopt a better plan than that on which the present new latrines have been constructed. (7) To consider the advisability of bringing into use the corrugated iron latrines, Hornbury's patent, sold by Messrs. Burn and Co. of Calcutta, which, if placed on a cemented basement, are free from many objections to which masonry or kutcha structures are liable. (8) To provide a pucca washing place at the end of each latrine, and to introduce the dry-earth system, a small end-shelter being provided for the storage of dry-earth. (9) To introduce Part IX of the Municipal Act for the better control of the private privies. (10) When urinals are erected to provide them with pucca floors shelving down to a little drain ending in a spout to carry the urine into a bucket, the whole nearly surrounded by a sheet of tarred iron. (11) To remedy the defects in connection with the trenching of the night-soil, the trenches being dug one foot wide and one foot deep, and in regular lines. (12) To consider the feasibility of establishing a properly constructed slaughter-house. (13) To dispose of, at any price, the great accumulation of bones at the present slaughtering places. (14) To get the pumps at the public wells repaired, as the lifting of water by a pump, instead of dipping a variety of vessels into the wells, is an immense improvement. (15) To compel the owners of private burial-grounds, under section 256 of the new Municipal Act, to close them. (16) To lay out the Mahomedan burial-grounds in the manner suggested to the Municipal subordinates, so that much space might be saved and the grounds be used a longer time. (17) To take steps to keep the Christian burial-ground in proper order. (18) To undertake, under section 260 of the new Municipal Act, the burial or burning of the pauper dead of both Hindus and Mahomedans. (19) Not to permit the domes to take away the clothing and pillows of the Hindu dead, but to have them burnt along with the body. (20) To take the necessary steps to have the Compulsory Vaccination Act brought into operation in the town. (21) To adopt measures for correcting the defects in the registration of deaths. (22) To institute systematically inquiries concerning the occurrence of deaths in the villages and to compare the information thus gathered with the entries in the registers kept at the registering circles, and to have the chowkidars punished who are found to have omitted to report any death. (23) To fully utilize in the towns the provisions of the Compulsory Registration Act, to appoint a person specially to report evasions by the people; and to deal with the constables and chowkidars under section 6 of the Act if they omit to report the births and deaths occurring in their beats.

Action taken on the suggestions.—It was reported (1) That the introduction of Part IX of Act III (B.C.), 1884, was at a meeting considered necessary, but as the measure was not discussed at a special meeting, as required by law, Government would not sanction it. The question has consequently been postponed pending the formation of the new Municipal Board. (2) That eight wells with pumps have been ordered to be repaired. (3) That additional conservancy carts are to be provided. (4) That an estimate for constructing a regular slaughter-house has been passed, but that the work will be undertaken from funds provided in the next year's budget. (5) That the attention of the District Superintendent of Police has been drawn to the defects in registration pointed out. (6) That the conservancy establishment has been strengthened by 1 jemadar, 1 head mehter and 4 mehters. (7) That the night-soil trenches are being dug one foot wide by one foot deep, and in regular lines. (8) That the Compulsory Vaccination Act has been introduced.

Chupra.—*Inspected in February.*—The sanitary condition of this town cannot be said to be satisfactory, as very grave defects exist, particularly under the heads of conservancy and drainage. In fact its sanitary status has seriously retrograded since it was last visited. This unsatisfactory state of things clearly indicates that the sanitary welfare of the town is little cared for by the Commissioners. The arrangements regarding the disposal of the dead and the conservation of private privies are defective and, in several respects, very objectionable.

The suggestions were—(1) To allot a larger portion of the income of the Municipality for placing the town on a proper sanitary footing. (2) To adopt measures for raising the revenues of the municipality and to apply the amount thus derived to sanitary improvements, the incidence of income to population in Chupra being lower than that of several other Municipalities of the same status containing an equal or even a smaller population. (3) To bestow careful and earnest attention to administering the sanitary clauses of the Municipal laws with activity and closeness, inasmuch as the sanitary welfare of the town hinges, in a great measure, on the strict enforcement of these laws. (4) To introduce the provisions of Part IX of Municipal Act III (B.C.) of 1884. (5) To provide all the roads in the more crowded parts of the town with saucer-shaped drains. (6) To prohibit the throwing of rubbish into the side drains. (7) To proceed more actively with the work of removing the encroachments over the side drains that are to be met with in many places. (8) To specially submit to Government, through the Commissioner of the Division, after the District Engineer's report on the subject is received, the question of the new line of railway, which runs between the town and chour, seriously threatening to obstruct the drainage of the town. (9) To compel the conservancy establishment to perform their duties properly—a set of rules being framed for their guidance and a scale of fines laid down for breaches or evasions. (10) To require the police, through their departmental superior, to look more energetically after those who commit nuisances and bring them up for punishment. (11) To employ street sweepings exclusively in filling up hollows, excavations, foul pools, &c. (12) To provide two gumlahs for each seat in the public latrines, one for fœces and one for urine. (13) To demolish the latrine at the Judge's cutcherry, which is a mere common khuddi, and to replace it by a properly constructed one. (14) To make the moveable latrines fulfil the purposes for which they are designed, that is being moved from spot to spot as the pits get filled. (15) To provide more public latrines, particularly moveable ones, and gradually put down promiscuous defœcation. (16) To carry out, without further delay, the suggestions made in the last Inspection Report regarding the cleansing of private privies by Municipal mehters. (17) To take special care that all the night-soil from both public and private latrines is buried in the trenching grounds and that the trenching is properly and systematically carried out. (18) To keep the night-soil depôts in proper condition and scrupulously clean, and to take great care to have all the night-soil from them daily removed. (19) To adopt measures to secure an adequate supply of dry earth and to carry out the process completely, if it is really necessary to keep up the dry earth shed at Shazadpore for deodorizing night-soil. (20) To adequately strengthen the establishment for the purpose of carrying out the conservancy arrangements effectually. (21) To invite the attention of the owners of the private markets to the very dirty condition of those places, and to induce them to maintain their markets in a clean and orderly state. (22) To consider as early as possible the advisability of establishing a properly constructed and well organized slaughter-house. (23) To have all offensive trades, if there be any, removed out of town. (24) Not to allow the accumulations of dirty water in the neighbourhood of wells, as it percolates back and fouls them. (25) To have the tanks that supply water for watering the roads built at such a height that water can be run off from the tanks into the carts, so that the labour of filling the carts by employing ghurras may be obviated. (26) To reduce the number of Mahomedan burial-grounds, and to close such of them as have become crowded. (27) To prohibit the use of grounds which are situated within the enclosures of houses, and to have the dead buried at a sufficient depth to admit of the chupper placed over the corpse being at least four feet below the surface of the ground. (28) To have the clothes and pillows of the Hindu dead burnt along with the body. (29) To prohibit the throwing of dead bodies into the river. (30) To bring into operation the Compulsory Vaccination Act. (21) To maintain the serais in a better condition and rectify the defects in connection with their general conservancy, drainage, latrine accommodation, &c. (32) To adopt measures for improving registration, which is at present very defective; and to introduce the hath-chitti or hand-book system in Sarun, as is done in some other districts. (33) To fully utilize in the Chupra town the provisions of the Compulsory Registration Act; to specially appoint a person to carefully and systematically detect all evasions of the requirements of the law; and to deal with the chowkidars and constables under section 6 of the Act, for omitting to report the births and deaths occurring within their beats.

Action taken on the suggestions.—Estimates have been prepared for new saucer drains in some of the principal bazars, for two new slaughter-houses, and for several urinals and a latrine for the Judge's Court.

Bettiah.—*Inspected in February.*—This Municipality appears to have grown up around the palace of the Maharaja of the place. The site is a bad one, owing to the swampy nature of the country to the north and east, to the Chandrawat river drying up in the hot weather, and to the lèvel of the town being low, rendering drainage difficult. The sanitary arrangements are of a primitive character, and the need for reform is urgent, particularly in connection with conservancy and the disposal of the dead.

The recommendations were—(1) To allot an adequate share of the income for radically improving the sanitary status of the town. (2) To utilize all parts, particularly Part IX of the New Municipal Act III (B.C.) of 1884. (3) To metal the many kutcha roads as funds will permit. (5) To remove the encroachments over the street drains. (5) To promptly fill up the excavations in which stagnant water collects, which is suspected to cause fever. (16) To repair the pucca drains on the sides of the principal streets. (7) To convert all the

drains to saucer-shaped ones, following the natural outfall, and being connected with houses s. as to carry off the bath and refuse water from them, and with wells to carry off spill water. (8) To provide proper but cheap public latrines (there being none of these conveniences) in the heart of the town, chiefly for women and children. (9) To bring into use the portable (Major Ramsay's) latrine which had been purchased for the kutcherry, but allowed to remain idle; and, if practicable, to introduce more of such latrines. (10) To have the private premises attended to by Municipal mehters, under Municipal supervision, levying a fee for the service. (11) To establish one or more grounds for trenching night-soil. (12) To dig the trenches in regular lines one foot deep by one foot wide, deep pits being scrupulously avoided, so that all nuisance from the process being avoided, cultivators may be induced to give their fields to be manured, or pay the Municipality for manuring them. (13) To adequately strengthen the conservancy establishment and provide additional carts and other appliances in order to carry out the foregoing suggestions. (14) To provide markets and slaughter-houses, as the present arrangements in this matter are unsatisfactory. (15) To repair the protecting rims of those wells which require such repairs. (16) To provide properly protected public wells supplied with pumps and buckets in localities convenient to the people. (17) To fix places for the burning or burying of the dead and to place them under proper supervision. (18) To ask the Maharaja to provide a latrine for his serai and to cause it to be kept in proper order. (19) To introduce the Compulsory Vaccination Act, which is absolutely necessary for breaking down the great opposition to vaccination exhibited by the people and to afford them protection from small-pox. (20) To bring into operation the Compulsory Registration Act and to utilize its provisions fully, and to carry out certain suggested measures for the improvement of registration generally.

Action taken on the suggestions.—The following resolutions were adopted:—(1) Excavations to be filled up with street sweepings. (2) Pay of mehters to be raised to Rs. 3-8 per mensem, in order to check them from selling street sweepings to private persons who desire to fill up excavations on their own lands. (3) Pucca drains to be repaired whenever necessary occasions offer, and estimates for connecting them with house drains and for providing pucca drains round wells for carrying off spill water be prepared. (4) The drains to be constructed in *future* be saucer-shaped, as the cost of converting the existing drains to this shape is prohibitive. (5) Public latrines on a small scale to be provided experimentally, as it is believed that these conveniences will not be used by the people. (6) The portable latrine not to be set up, as nobody but the Sub-Deputy Magistrate had used it since its introduction. (7) The cleaning of private latrines by municipal mehters, and levying a fee for the service, was considered extremely unadvisable, as it would be a hardship to levy a higher fee for the service when the people can employ private mehters at a lower cost; but that stricter supervision should be exercised over the private mehters, and that they be required to file a list of the houses in which they work. (8) That trenching grounds had already been provided, but that the night-soil be trenched in the manner suggested. (9) That for efficient conservancy four sirdar mehters be employed. (10) That it would be unfair for the Municipality to take over the private markets, as they belong to the Maharaja, the land being his, and the fees being collected by him. (11) That protecting irons be supplied to the wells as opportunity offers. (12) That until the provisions of the Act relating to burial-grounds are extended, it would be impossible to exercise supervision over them. (13) That the consideration of the introduction of the Compulsory Vaccination Act be postponed until the next meeting. (13) That the mohurir be warned that he will be dismissed if he does not supervise registration more carefully.

Motihari.—*Inspected in February.*—The sanitary arrangements of this town were found to be not at all satisfactory. Much has yet to be effected before it can be said to be on a proper sanitary footing. The arrangements under the heads of drainage, conservancy, water-supply, and disposal of the dead are all more or less defective. It is under contemplation to provide the town with an effective system of drainage, the levels for this purpose having been taken by the District Engineer.

The suggestions were—(1) To enhance the income of the Municipality by raising taxation, as the incidence of income to population in this town is lower than that of other towns with an equal or smaller number of inhabitants. (2) To allot annually a fair share of the income for improving the sanitary status of the town. (3) To have the kutcha roads metalled as funds will permit. (4) To have the proposed drains made pucca and saucer-shaped, having connections with wells and houses to carry off spill and bath-water. (5) To take special care with regard to the proper use of street sweepings for filling in holes, so that, when they are employed for this purpose, they may be put *into* an excavation and not piled on its edge. (6) To provide public latrines at convenient sites for the poor, the kutchery and the market being also supplied with these conveniences. (7) To introduce Major Ramsay's portable latrines, as they are well suited to this town which is surrounded by fields on nearly all sides. (8) To prohibit promiscuous defæcation when public latrines are established. (9) To rectify the defects in construction and cleaning existing in the latrine connected with the serai. (10) To have the private privies attended to by the Municipal mehters under Municipal supervision. (11) To introduce Part IX of the new Municipal Act, as it would materially help the placing of the conservancy of the private latrines on a proper footing. (12) To provide sufficient and conveniently situated grounds for trenching the night-soil. (13) To provide an adequate conservancy establishment and a sufficient number of carts in order to carry out the foregoing suggestions. (14) To consider the advisability

of establishing a municipal market and a slaughter-house. (15) To have all the wells properly protected, and to repair the parapet walls of those that require repair, to prevent spill-water finding its way back into the wells. (16) To make arrangements for the supervision of all burials in future, so that waste of space caused by burying bodies irregularly may be checked. (17) To see that the corpses are buried sufficiently deep to admit of the chupper usually placed by the Mahomedans over their dead being at least four feet from the surface of the ground. (18) To take steps to have the Compulsory Vaccination Act brought into operation. (19) To cause the Overseer and Tax Collector to supervise the registration of deaths. (20) To fully utilize the provisions of the Compulsory Registration Act IV (B.C.) of 1873, and not to permit it to remain a dead letter.

Monghyr.—*Inspected in February.*—Although there is considerable room for improvement, the sanitary condition of this town is satisfactory There was clear evidence, at the time of my visit, to show that its sanitary interests were carefully attended to by the Commissioners. The roads were in good condition; the conservancy arrangements continued to be looked after with commendable care and attention; the kutcha wells were being converted into good substantial pucca ones, one being taken in hand annually. The drainage system is however to a certain extent defective, but the Commissioners, with the limited means at their disposal, are trying their best to remedy the defects. The arrangements regarding the disposal of the dead are unobjectionable, with the exception that those who cannot afford the cost of cremation throw their dead partially burnt into the river.

The suggestions were—(1) To devote a larger share of the income for sanitary works, as the present allotment of only 8·6 per cent. of the income did not appear a fair one, specially as over Rs. 9,000 per annum has been set free by the Municipality having been relieved of police charges. (2) To metal the kutcha roads gradually. (3) Pending the solution of the question of a more perfect system of drainage, to substitute pucca shallow saucer drains for the deep ones whenever any portions of the latter fall into disrepair or new drains are necessitated. (4) To consider the question of utilizing the Latrine Act, which has already been sanctioned, and to extend to the whole town the scheme of cleaning the private privies by Municipal agency. (5) To give a trial to Major Ramsay's patent portable latrines, as they seem peculiarly suitable for the use of the people living on the outskirts of the town. (6) Gradually, as funds will permit, to provide the pucca public latrines with additional ventilation. (7) To direct the police to prohibit people from urinating at places other than the public urinals, and to bring up the offenders for punishment, on pain of being reported to the Magistrate in case of laxity in the performance of this duty. (8) To prohibit the practice of throwing partially burnt dead bodies into the river and of burying dead animals on the river banks. (9) To request the Superintendent of Vaccination, Sonthal Pergunnahs Circle, to supply thoroughly trained vaccinators for the town. (10) To adopt such measures as will radically improve the registration of deaths in the district. (11) With regard to the town, to fully utilize the provisions of the Compulsory Registration Act; to appoint a person to seek out and report regularly those who omit to register births and deaths; and punish the constables and chowkidars under section 6 of the Act in every case in which they omit to report births and deaths.

Action taken on the suggestions.—The question of a more perfect system of drainage was considered by the Commissioners, but considered not feasible on the ground of cost. But this matter, it is reported, will not be lost sight of, and that in the meantime saucer drains are to take the place of the present deep covered ones when the latter are to be repaired, or new ones are required. The Commissioners are not at present in favour of Major Ramsay's portable latrines. Pucca latrines will be gradually provided. Steps have beentaken to bring the law relating to latrines into operation, and to stop the practice of urinating on the public thoroughfares, the police having been instructed to bring up offenders for punishment. Orders have been issued to stop the practices of throwing half-cremated dead bodies into the river, and of burying dead animals on its banks. The Civil Surgeon has been communicated with regard to the unsatisfactory working of the Vaccination System in the west of the town, and the special attention of the District Superintendent of Police and of the Municipal authorities has been drawn to the subject of registration, resulting in a marked improvement.

Jamalpore.—*Inspected in February.*—The sanitary condition of this important towns was not found to be good, and many grave defects called for rectification.

The recommendations were—(1) To allot an equitable share of the income for carrying out sanitary reforms. (2) To administer the sanitary clauses of the Municipal laws with greater activity and closeness than was being done. (3) To substitute saucer-shaped drains for the deep ones, which are very faulty in construction and obstructed in various ways. (4) Pending the construction of the saucer drains, to prevent accumulations of foul water in the existing drains and to keep them in effective working order. (5) To remove the existing encroachments over the drains and strictly prohibit all future encroachments. (6) To remove the night-soil to the trenching ground at least twice in 24 hours, discontinuing the present objectionable practice of permitting it to accumulate in the iron receptacles for a whole day to be removed at night. (7) To prohibit the municipal mehters from performing work on their own account. (8) To afford the public latrines better ventilation than obtaining in them at present. (9) To tar the latrine drains. (10) To provide the market and kutcheries with latrines. (11) To provide a basin to catch urine and washings in the new latrine in the European quarter of the town, so as to prevent the liquid passing into the drain. (12) To work the portable latrines properly, moving them frequently over

shallow trenches, as at present large cess pits, full of soil which will take a long time to be absorbed, are seen throughout the station, which are themselves unsightly without the danger of their affecting the water-supply. (13) To dig the trenches 1½ feet wide by 1 foot deep in straight lines across the ground, avoiding the present deep pits, which prevent the night-soil being absorbed by the roots of the plants. (14) To induce the owners of the private market to have its floor and drains paved, and to provide it with water and latrine services. (15) Pending the carrying out of the proposal to improve the drinking water-supply of the station by the Railway Company and Government, to put into order the public wells and to provide them with platforms and drains, in order that the re-entry into the wells and soakage into the ground of spill-water may be obviated. (16) To give early effect to the proposal to close the burial-grounds for Mahomedans, which have become overcrowded, and to provide another ground in their place. (17) To discourage the practice of the chamars and domes eating the flesh of dead horses and cows. (18) To take steps for the improvement of the sanitary condition of the villages of Nyagong and Jahangera, which are reported to be unhealthy, or, as contemplated, to remove a part of the former, so as to leave a considerable space between it and the European quarter of the town. (19) To fully utilize the provisions of the Compulsory Registration Act, and to improve registration generally.

Action taken on the suggestions.—It was resolved (1) To allot a larger portion of the income for sanitary improvements, and for increasing the supply of well-water as far as the means at disposal will admit. (2) To adhere to the bye-laws rigidly. (3) To have kunkur supplied for the repairs of the roads examined by some competent person, such as the Road Cess Engineer. (4) To adopt steps for the survey of the existing system of drainage with the view to improvement, and that in the meanwhile the suggestion to keep the drains in effective working order be carried out as far as practicable. (5) To adopt steps for the more speedy repair of the carts and to provide additional carts. (6) To put a stop to the mehters performing private work on their own account. (7) To build two more public latrines. (8) To provide additional buckets in order that night-soil might be removed twice in 24 hours. (9) To have the ventilation of the public latrines examined by an Engineer. (10) To tar the latrine drains. (11) To provide basins to catch the urine and washings in the new latrine. (12) To give immediate attention to the suggestions regarding the portable latrines and the trenching of night-soil. (13) To call upon the owners of the market to rectify the defects pointed out. (14) To ask the Agent of the East Indian Railway Company to make a grant-in-aid for digging additional wells within the limits of the Company's ground. (15) To reopen the question of providing a new burial-ground for Mahomedans, with a view to close the existing one. (16) To call the attention of the Agent of the East Indian Railway to the correspondence on the subject of the removal of Nyagong. (17) To adopt steps for rectifying the sanitary defects of Jehangira.

Suburban Municipality.—*Inspected on 6th, 13th, 14th, 17th and 18th March 1884.*—*6th March.*—1. Began the inspection of this Municipality, visiting latrines in Kidderpore and Watgunge and the Kidderpore bazar, which was rather an uninviting place, with the outfall of the pucka drain into Tolly's Nullah requiring attention. Sweepings from the drains of the bazar should be collected for removal, and not allowed to pass into the nullah to be carried away by the tide.

2. With regard to the latrines seen to-day (except the ones connected with the Government Dockyard) they seem to be made unnecessarily high, with too great an amount of brickwork. There is such a distance for night-soil to fall into the pans that splashing occurs, with fouling of the arched spaces underneath as a consequence. Expense would be avoided with the use of less brickwork.

3. Messrs. Gillanders, Arbuthnot & Co. are building a new latrine for the Hooghly Jute Mills in Garden Reach. It is enclosed on two sides by a wall, about 12 feet high. A high wall behind also shuts its end, so that it can only be ventilated at one end. The roof is close down on the latrine building, so as not to show over the hiding wall. The result of these defective arrangements is that the latrine towards its middle cells is pitch dark, without the slightest ventilation, and will be a disagreeable and noisome place, which will be avoided in every possible way by the coolies for whom it has been constructed, and from its closeness may become offensive to passers-by on the road. Too much has been sacrified to external appearances. The outer wall should have large holes made in it for the passage of air, the roof of the latrine should be raised, part of the entrance walls to the cells should be curtailed or perforated, and the whole place so constructed that there will be a free passage of air through it at all times and seasons.

4. The water for this mill is taken from the Moti Jheel on the other side of the road, and the water after passing through the engine boilers passes into a small open tank, where it cools and from which it recrosses the road into the jheel. The coolies bathe in the warm-water tank and drink from the Moti Jheel, which was formerly clear water covered with weeds, and is now rather dirty looking, evidently from earth. It is said that water is at times brought from the river, and after being used by the boilers passes into the tank. I could not get any correct information as to the consequence to health of the use of this water. The Moti Jheel is used for bathing, and there are native huts at the further end, the filthy water of which no doubt drains into it. It was formerly considered the best water-supply in Garden Reach.

5. I visited the Paharpore trenching ground, and found the ground much too small for the purpose. Here pitting of night-soil was done on a large scale; 20 cart-loads a day was

suggested, but I should think a great many more. There were large pits brimfull with quite an insufficient supply of earth to cover them. The soil ferments and reappears on the surface, and the stench and plague of flies was dreadful. A dweller near said it was often so bad that they could not eat their food. There was an old tank or hollow partly filled with liquid refuse as if latrine washings had been brought and thrown in mixed with sewage. This ground should be abandoned for a time, and a more extensive one taken up. If any one can be got to cultivate it, so much the better. If not, if the contractor would raise fodder crops for his cattle, it would be a good use to put the ground to and improve its salubrity. If every cold season a large extent of rice land was taken up for *one year only*, and manured in shallow trenches, I think the time would come when people would allow their lands to be used for this purpose willingly. They will never give them up for deep trenching, which puts the fields out of cultivation for so long and makes them so foul. I believe it is the offensive deep trenching system that influences the people so unfavourably towards the system of manuring. Using rice fields in the cold and hot seasons, the raised grounds would be available in the rains. The Paharpore trenching ground is about two miles from Kidderpore bridge.

6. The sanitary condition of the part of Garden Reach near the ex-King of Oude's is a scandal. It is impossible to find words to describe it. It seems within its limits to concentrate all the conditions which are contrary to health, and requires, if beyond the powers of the Municipality, the immediate attention of Government.

7. The Bengali bazar is one of the worst bustees I have ever seen. It is crowded with houses so close together that the sweepers must have great difficulty in penetrating with buckets to the private latrines, which abut on lanes left between the huts. The lanes are filled with rubbish and full of offensive sludge. This bustee is without drainage, without proper roads, much overcrowded, and in an unspeakably filthy condition, refuse apparently never being removed from it.

8. The drains throughout the Garden Reach quarter appear in a bad state, too deep, and often choked with collections at places of foul water. There is a creek in Garden Reach which passes through the ex-King of Oude's enclosure, which commands its outfall where there ought to be a sluice, as in high tides the water dams back far into the suburbs, and then night-soil is thrown into it, which passes into the river to the injury of the health of the Port. There ought to be a sluice gate at the outlet of this creek under the control of the municipality.

9. *13th March* 1884.—Continued the inspection of the Suburban Municipality, and devoted attention to the Bhowanipore and Kalighat neighbourhoods. I found that the Kamrangatulla drain, which receives the drainage of the Russa roads and bustees to the east of the road, where it becomes kutcha, is in a very bad state indeed. The fluid filth which it conveys is sewage apparently, and is quite at a standstill, no motion being apparent in it. There was a deep, black, fœtid mass which would not move on till flushed out by a storm. The drain was kutcha and wound among bustees with privies opening upon it, which were quite unapproachable without wading up to the knees in the filthy fluid.

10. The Gungaram busti was in a very bad state, full of herds of buffaloes which are now wallowing in mire, so that the condition of things in the rains must be infinitely worse. There is no drainage. The condition of Gungaram has been considered, and it is the intention of the Municipality to remodel it.

11. In the bustee called Mallye, to the east of this and bordering on the Circular Road, there was no latrine accommodation for the people, and squatting was common. This was evidently brought about by the proprietor having according to law erected a latrine on the property; but as he insisted on being paid for its use, the people were driven to the disgusting practice in a crowded place of easing themselves in the open spaces.

12. There is a tank in Kassia Bagan close to the Circular Road, behind Mr. Webb's house, which stands on the road, which is in a dangerous state. It has been partly filled up, and this process has been stopped, as Mr. Webb objected. One-half is now quite filled up and dry and the other filled apparently to a slight depth with thick fluid. It would be much better to continue the filling up, beginning from the shallow south-west corner and dewater the deeper part if any great amount is found present. The vegetation growing on the surface gives the appearance of its being however shallow throughout.

13. Kalighat temple and neighbourhood is in a bad state, but not so objectionable as when last visited; but the bustee requires to be laid out anew with proper roads and side-drains. The burning ghat at Kalighat is well kept.

14. The Dakuria trenching ground is much larger than the one visited before, and is in better order. It has not been cultivated, which is a mistake. I was told today by the man who formerly had such difficulty in disposing of vegetables grown here that the prejudice is disappearing.

The burial ground of the Mysore family is in good order.

15. Generally the parts visited today, as the day before, were deficient in latrine accommodation; one erected in a bustee had been built around so closely that it had gone out of use. Latrines generally not well kept.

16. *14th March* 1884.—Inspected today parts of the town east of Circular Road, Kurryah, Tengra, and Entally. All these places seem badly supplied with latrines. The Tiljullah burial-ground used by the town and suburbs is a Mahomedan and low class Hindu place of interment. The Hindu part seems much overcrowded, and when in digging new graves bones are turned up, they are thrown into a shallow tank, the falling

water showing many skulls and bones on the bank, so that the bottom is most likely covered. This ground should be extended, and parts now over-used closed for a number of years.

17. Inspected Mr. Masson's yard for the preparation of skins, and found that, with better arrangements for the disposal of refuse water, it might be carried on without nuisance. Part of a godown in which skins were being steeped required re-flooring, to provide for the proper removal of spill water.

18. Inspected the premises of the Gobra Tanning Company, and found them well conducted, except the provision for the removal of the refuse water, which is collected in a tank and removed by carts once a week. The Manager proposes to lay a pipe drain from the premises to the main outlet drain, 1,400 feet distant, which he may be able to do. The necessity of a flushing apparatus to keep the pipe clear has been explained to him. The main drain seen (No. 8?) did not contain any water. Its bottom and sides were only *a little damp*. The whole area affected by this drain allows all bath and refuse-water to soak in.

19. Inspected two hog's lard factories, one in possession of a Bengali, and the other of a Chinaman. Great herds of pigs are no longer kept here, but only a few brought in from Dhappa and daily slaughtered. After a smart outbreak of cholera in the bustee, the removal of the pigs was carried out.

20. Inspected the Tengra slaughter-house, and found it in good order. Saw part of the new canal for the removal of Calcutta storm water; the stream was *inwards towards* the town, and consisted of very dark coloured fluid. There is abundant earth from the various canals here to fill up many tanks.

21. *The 17th March* 1884.—Continued inspection of Suburban Municipality and visited Shah Bagan bustee, which is beside the new ice works. There had been a bad outbreak of cholera lately, the officer in charge of the ice works thinking that it depended upon the filling up of a small tank with street rubbish, which was imperfectly covered over with earth. There are, however, two or three bad water-tanks in the bustee; two are now used to receive water from the ice-house engines, and are according to the above official rapidly improving in quality, the water being constantly changed, fresh supplies being brought in from the canal, treated and passed into the tanks. There is, however, no drainage in the bustee of any kind; all refuse water sinks in and at some places is very foul, as just behind the residence of the Engineer in charge of the ice works. The boundary drain of this bustee is nothing but a common place of easement There is a small latrine, but it must only be used by a part of the people. A private latrine examined had not been cleaned lately.

22. When the tank was filled up, the ground was not properly levelled, so that surface water might pass into the drain. What ought to be drains close past house doors are all blocked with rubbish.

23. Visited Kassai bustee, which has been improved; but the land is not being taken up rapidly, as the Government charges high rents. There was a latrine, but it can be only partially used, as there is general defæcation.

24. There are mat-latrines all along the canal. They seem to be kept in good order and often tarred all over the walls, seats, floors, &c. The roof is corrugated iron.

25. Visited Bahir Mirzapore goala basti formerly in such a bad state. It has much improved, as the cowdung is collected in tanks and what is not made into cakes is removed at the expense of the goala by the contractor. The situation of the bustee is low, three or four feet below the level of the surrounding land. The drains are no longer filled with cowdung.

26. Simla bustee is another goala village. The cow houses kept in better order than formerly, but on the east side of the bustee the stench is dreadful from general squatting. It is said that the workmen of Dino Baral and of Seram Palit's oil-mills reso rt to this place, as there is no latrine accommodation for the mills. The canal latrine No. 4 near at hand was evidently little used, the ground about being covered with fœces. There are several Mahomedans' burial-grounds in this neighbourhood, mostly overcrowded and surrounded by houses. The Moonshepara one is surrounded by houses, overcrowded, and should be closed. There were three tanneries here, the smell of which was complained about. There was not much to find fault with, except that there was no outlet for refuse water, which collected n holes and evaporated, leaving dirty masses of refuse.

27. Haldar Bagan, another goala bustee, is in its original condition. It miust contain about 150 cows, and there is absolutely no arrangement for the removal of the cowdung. It flows out of the cow-houses into drains in several directions, generally leading to the public roadside drains to the south. One ditch was blocked. It must have been about 200 yards long, two feet deep, and four feet broad, one mass of cowdung from end to end. They were other shorter ditches in the same state, The long one had been blocked at one end to prevent the dung passing into the public drain, which it had done before and dried up. The dry manure was being liquified again by water from a tank being emptied. One cow stable emptied out into a circular tank, which was filled with cowdung and never emptied. This was bubbling and fermenting. The house latrines were in a bad state, and evidently never cleaned. There was several most unwholesome looking water tanks about the bustee. Altogether it was in the worst possible sanitary condition, and it was evident that no proper means had been taken to make the people mend their ways. Heavy daily fines are required until a better state of matters is brought about.

28. *18th March* 1884.—To-day inspected the northern part of the Suburban Municipality up to its limit at the Chitpore Burning Ghat, which was well kept. Three deaths from cholera were registered on the 14th. Some people living near said sparks flew from

the cremations and endangered their leaf and grass huts, and desired a protecting exterior wall to keep off the wind, which they represented carried the sparks.

I observed the Public Works Department have planted trees along the Circular Canal, but that many of the baskets, for which I am informed, they paid Re. 1 each, which should protect the trees, are so ruinous and in cases so low that they no longer answer the purpose, and the trees can easily be destroyed by cattle.

29. I examined the Talla north night-soil burial-ground. There were loud complaints against it and information given that a number of coolies had been put on just before my inspection to cover over evil smelling trenches. They had not succeeded in destroying the stench, which was strong in places. It is now, however, going to be cultivated, which will remove the bad smell and bring the soil into a wholesome condition. Plantains are going to be put in. It is evident that the ground has been badly attended to.

30. I examined the premises of a company who makes bone dust and phosphates, and found little to complain of considering the nature of the business. There was of course smell from the collection and preparation of bones, but the factory is well removed from other houses, being bounded by the canal on one side and by gardens on the others. There was refuse horns which were disagreeable, and should, if useless, be otherwise disposed of in place of merely being thrown out They should be removed either to the Salt Lake with the Calcutta rubbish or other convenient place. The company should not allow the workmen to squat about the place. There should be a simple latrine for their use and a sweeper to clean it. A moveable latrine over a shallow trench might answer the purpose.

31. I inspected the Ghose Bagan, one of the improved bustees, which was open, clean, and well laid out; but Nawabputti, Gasiarapara, and Chooriharapara were densely overcrowded, especially the first, and were merely close aggregations of huts crowded together without any arrangement for drainage or ventilation. They are often much overcrowded with people, being full of lodgings for mill hands, who are often said to sleep one above another as if in bunks in a ship. Cholera has lately been in Nawabputti I visited the North Suburban Vaccine Depôt. There as well as at Bhowanipore the books had been removed by the Inspecting Officer, Preamber Babu.

32. *Points requiring attention.*—(1) Proper attention to surface drainage by the provision of pucka drains where possible and keeping kutcha ones clear Something more is required. however, in the crowded parts of the town. All the divisions from the Barrackpore road bridge between the Circular Canal and the Circular Road south to Sealdah should have underground drains and drain into the Calcutta sewers. From Sealdah station southwards the divisions lying along the Circular Road, such as Entally, Kurrya, Tiljullah, North Chukerbeya, Kasi Bagan, and Bhowanipore, should have underground drains communicating with the Circular Road drain, and all public privies in these divisions should be connected with the town drains. Night-soil from private and other privies not directly connected with the drains should be discharged into the drains at suitable places. This would relieve the conservancy establishment of enormous labour, and after the first expense would relieve the Municipality from considerable annual charges. Under the system of conservancy as at present carried out, one-third of the night-soil of these, the most crowded parts of the town, is never removed. What is removed is pitted in night-soil trenching grounds, which afford inadequate space for the proper carrying out of this plan of disposal, and they become a nuisance and danger to the neighbourhoods in which they are situated.

33. I would bring specially under the notice of the Commissioners that the cleaning of private privies is most imperfectly carried out, and many have the appearance of never being cleaned. The contractor must be kept up to his work, or the duty undertaken by the Municipality itself. The present state of matters is not only a wrong to the people, but a constant danger to the public health.

34. In providing public latrines I should recommend to the Commissioners that in future the parts for males and females should be distinctly separate buildings, and that proprietors of lands who are obliged to erect public privies be not allowed to levy prohibitive charges on the people for the use of such privies. The disgusting practice of squatting on unoccupied lands still continues, not only common, but the rule wherever there is such a piece of land. In one of the improved bustees, Kasia Bagan, the open spaces were covered with human ordure, and the place generally stank. What is the use of the Municipality making good improvements, such as has been done in this village, and then allowing the ground to be poisoned before it has again been taken up for houses? Is there no system of police by which the Municipality can remove this evil; or, in the event of want of legal power, cannot it be procured from Government for the sake of the public good?

35. I can say, during my inspection, extending over five days, I met no police constable or officer in any part of any division of the Municipality, except at stations, though their presence was urgently required; nor did I see any one apprehended for the commission of nuisances, though I saw them frequently committed. I am informed that persons brought up for offences of this kind are very inadequately punished, and the result is that either from defect of law, negligence of police, or inadequate punishment, the Suburban Municipality is in a state which is a disgrace to the Commissioners.

36. I note that in 1882 there were 2,470 deaths from cholera in the suburbs, which is the highest record in ten years, except 1876, which gave 3,119 deaths. The year 1883 gave 2,177 deaths, so that the death-rate from this disease is by no means sensibly declining, although

many residents in the suburbs avail themselves of Calcutta filtered water. If there were any material improvement in the sanitary condition of the suburbs, a fall in the cholera death-rate would follow.

37. In spite of the improvement of some bustees, the removal of the herds of swine, the cleansing of some of the goala bustees, the state of the Suburbs is still such as to constitute a grave source of danger to the health of the town of Calcutta, the Port with its shipping, and to the country generally from its relation to commerce. The Commissioners should consider the necessity of the appointment of an Officer of health, whose services are urgently required; and if this officer were granted magisterial powers, so that questions affecting health were adequately dealt with, some change in the present state of matters might be brought about. Its continuance will, I am sure, be no longer tolerated if brought to the notice of the Government. Important industries are yearly springing up in the Suburbs, so that sanitary reform becomes in an equal ratio important and urgent. I note that in the report on the sanitary measures in India in 1881-82, presented to Parliament, the insanitary condition of the Suburbs is dwelt on, and its present state compared to that of Calcutta before the days of sanitary reform.

Action taken on the suggestions.—Paragraph 1.—The Collector of the 24-Pergunnahs has been requested to carry out the suggestion of the Sanitary Commissioner regarding the removal of sweepings of the Kidderpore bazar.

Paragraph 2.—Orders have been issued to the officers concerned pointing out the remark of the Sanitary Commissioner on the construction of latrines, and to report if anything can be done to put the latrines referred to in good order.

Paragraph 3.—Messrs. Gillanders, Arbuthnot and Company have been requested to afford better ventilation to their latrine accommodation by means of opening in the front covering wall of the latrine and in the back wall, as suggested by the Sanitary Commissioner in his letter No. 208 of 20th January 1885.

Paragraph 4.—The matter is still under consideration of the Commissioners.

Paragraph 5.—The House Service Contractor has been directed to remove the Pahar pore trenching ground to a suitable place.

Paragraph 6.—The matter has not been finally considered by the Commissioners.

Paragraph 7.—Steps are being taken to improve the Bengali bazar.

Paragraph 8.—The matter has not yet been finally disposed of.

Paragraph 9.—Steps are being taken to improve this drain.

Paragraph 10.—Steps are being taken to improve this bustee.

Paragraph 11.—The matter is still under consideration of the Commissioners.

Paragraph 12.—The sweeping contractor has very nearly completed the work of filling up the tank referred to.

Paragraph 13.—The question of the Kallighât bustee is under the consideration of the Commissioners.

Paragraph 14.—The House Service Contractor of the Municipality has been directed to carry out the Sanitary Commissioner's suggestions, but I am afraid the Commissioners cannot compel him to do so.

The Deputy Sanitary Commissioner, Metropolitan Circle, has furnished this office with his suggestions in connection with the construction and management of public privies, and the subject is still under the consideration of the Commissioners.

Paragraph 15.—Overseers and Inspectors attached to this Municipality have been directed to submit detailed reports showing the existing state of things as well as proposals for improvements.

Paragraph 16.—The Engineer of this Municipality has been directed to select suitable land immediately adjoining the Tiljullah burial-ground.

Paragraph 17.—Mr. Mason has closed his place of business.

Paragraph 18.—The Gobra Tannery Company has carried out the suggestions of the Sanitary Commissioner.

Paragraph 19.—The Sanitary Commissioner's report shews that no pigs are now kept by these people.

Paragraph 20.—The canal authorities have been written to on the subject

Paragraphs 21 *and* 22.—The nuisance complained of, as caused by the filling up of the tank, has been removed. There are two latrines in that bustee,—one built by the Commissioners at the cost of the owner, and the other belonging to a mehter. The owner has been directed to build a third to the west of the bustee. The matter of the tanks is still under the consideration of the Commissioners.

Paragraph 23.—The latrine at Cassie bustee is being used by the ryots.

Paragraphs 24 *and* 25.—No remark is necessary.

Paragraph 26.—A report regarding this bustee has been submitted by the Overseer, and the subject is under the consideration of the Commissioners.

Paragraph 27.—A Committee was appointed for the consideration of gowalla bustees, and the subject had been to a certain extent considered by that Committee, when it was dissolved on the formation of the new Municipality.

Paragraph 28.—The Superintendent of the Municipality inspected the burning ghât and suggested that a new wall should be built to the west of the burning ghât in order to make it more private, as the cremation of bodies is seen from the river. If this wall is built, the Commissioners will probably not be required to raise the wall proposed by the Sanitary Commissioner, as this new wall will shut out the wind.

Paragraph 29.—The Talla night-soil burial-ground complained of therein has been closed.

Paragraph 30 —The Sanitary Commissioner has nothing to complain of about this place of business. The refuse referred to therein has been cleared away, and the work is now being carried on properly.

Paragraph 31 —The bustees referred to therein have been inspected and reported on by two medical officers. The matter is under the consideration of the Commissioners.

Paragraph 32.—Copy of the reply from the Calcutta Corporation is herewith sent for the Sanitary Commissioner's information.

Paragraph 33.—Efforts have been taken to carry out the works of cleansing the privies satisfactorily. These have been partially successful.

Paragraph 34.—Instructions have been given to the Engineer of the Municipality that in future the Sanitary Commissioner's suggestions as to separation of latrines to be used by males from those by females are to be attended to whenever possible, and the question of levy of prohibitive charges by landholders for the use of latrines is under the consideration of the Law Committee. A letter has been written to the owner of the Malic bustee, pointing out that, unless the latrine is opened to the public, the Commissioner will be obliged to prosecute him for allowing the nuisance of squatting on unoccupied lands.

Paragraph 35 —The attention of the Deputy Commissioner of Police has been drawn under section 365 of the Act.

Paragraph 37.—The Commissioners regret that there is no prospect of the Municipality being able to afford to appoint a Health Officer.

From - ROBERT TURNBULL, ESQ., Secy. to the Corporation of the Town of Calcutta, to the Superintendent, Suburban Municipality. No. 1786, dated Calcutta, the 3rd November 1884.

IN reply to your letter No. 195, dated 8th ultimo, I am directed to forward a copy of a note by the Engineer to the Corporation on the points adverted to.

Note by the Engineer of the Corporation of the Town of Calcutta, relating to the drainage of the Suburban Municipality.

1. The enclosure to Mr. Owen's letter is an extract from paragraph 2 of the Sanitary Commissioner's report on the Suburbs, dated 24th March 1884, and the remarks made may be conveniently divided under two heads,—

1st—The drainage of the suburban area between the Circular Canal and Upper Circular Road from the Barrackpore Road to Sealdah; and

2nd—The drainage of the suburban area skirting Lower Circular Road from Sealdah to Bhowanipore.

2. As to the first of these, I have to remark that our Commissioners have had an engineering survey in hand, which is now on the eve of completion, for preparing a complete scheme of drainage in connection with the Upper Circular Road sewer, and it is probable that the scheme will be ready in the course of two months or so.

3. As to the second, I have to remark that it is not practicable to make use of the Lower Circular Road sewer for drainage of the Suburbs, with the trifling exception to be presently mentioned. The general fall of the land is to the south-east, and to attempt to use the sewer for its drainage would be equivalent to attempting to compel water to run uphill. The only proper plan for draining the locality in question is to make it form a portion of a comprehensive scheme of arterial drainage to the Biddiadhurry River, towards which ultimate outfall the general drainage plan of Calcutta itself is gradually tending. The exception to which I have alluded to is the premises on the suburban side immediately abutting on the Lower Circular Road, the compounds of some of which may find relief in the sewer beneath that road, and on this point the Town Council, at their meeting on 30th August last, resolved to address the Government.

4. I take this opportunity of again noting the physical conditions to which I have many times alluded in more or less direct terms, viz., that the drainage of Calcutta can never be considered complete until its outfall be carried through the Salt Water Lakes to the Biddiadhurry River, and that the drainage of the suburbs is inseparably connected with that of Calcutta. I may further add my opinion, though it has no novelty, that the reclamation or regulation of the Salt Water Lakes is also intimately connected with, if not a necessary adjunct of, the subject.

Darjiling.—*Inspected in May.*—Some improvements were effected in this Municipality since it was last inspected in November 1883, chiefly under the heads of conservancy, water-supply, and drainage; but there were still exist several sanitary defects requiring rectification. It will be seen further on that almost all the suggestions made at this inspection have been given effect to.

The suggestions were—(1) To allot annually a much larger proportion of the income for improving the sanitary status of this sanitarium. (2) To provide new fencing in the place of the old wooden one which has become rotten and useless, throughout many parts of the town, particularly that through Wilson's bustee, where it is in a dangerous condition. (3) To attend to the preservation of the few remaining forest trees in the station, and to the necessity of planting others to replace them as they die out and are destroyed. (4) To have the sites of the excavations dug out for new houses on the part of the Beachwood property sloped off before the houses are occupied, to prevent accidents. (5) To consider the advisability of purchasing or securing under the Land Acquisition Act all available land for house building, and constructing thereon native houses upon a good and healthy plan, as this course would be greatly advantageous to the sanitary condition of the Municipality. (6) To attend to the cleaning of the drains and to the removal by the sweepers of many things that are thrown into them. (7) To cause rubbish and other offensive matter to be removed from the upper part of the jhora which continues down past Mr. Jeffrey's house, and to put a stop to the practice of throwing such things there by sweepers and householders. (8) To have better connections with public drains for almost all the houses in the bazar and throughout the station, and to use, when possible, good cement in making these connections, so that the use of wooden shoots for the purpose may be avoided. (9) To invite the attention of the Priest to the dirty condition of the drain from the cookroom of St. Joseph's Seminary past the servants' houses of Meadow Bank, and to get the above-mentioned drain made pucca till it passes below the servants' houses. (10) To have the servants' latrine right under the dining-room windows of the Drum Druid, and the Campbell Cottage latrine which stands only 22 feet from the drinking water reservoir, removed further off. (11) To extend to the whole of the Municipality Part IX of the new Municipal Act III (B.C.) of 1884. (12) To see that the night-soil is always actually buried. (13) To call upon the owners of the private markets to provide latrines at these places. (14) Not to allow the horns and bones of the cattle slaughtered to lie about the slaughter-houses. (15) To have the dead bodies well covered with earth, the graves being dug sufficiently deep for the purpose, which does not appear to be done at present. (16) To strictly apply the provisions of the Compulsory Registration Act, so that the drawbacks mentioned, namely, that the Europeans delay registration and the natives are prejudiced against the measure, may be overcome; to appoint persons to detect evasions on the part of the people; and to get the constables and others who have to report the births and deaths, punished under section 6 of the Act when they omit to perform this duty.

Action taken on the suggestions—(1) Government has been asked to extend Part IX of Act III (B.C.) of 1884 to the entire Municipality. (2) The old wooden fencing has been extensively repaired, including that through Wilson's bustee, but gaps in fences cannot be a oided, as many railings have been stolen. Provision will, however, be made in next budget for new fencing. (3) The question of tending and planting trees is receiving attention. Several sickly-looking conifers on the Mall road, which interfered with the growth of the Cryptomeria Japonica having already been felled. (4) The builders of houses on the Beachwood property have been warned against the dangerous practice of not sloping off the excavations made by them out of the hill along the cart-road, and it is intended at the next meeting to consider the question of moving Government to sanction bye-laws under section 232 of the Bengal Municipal Act, 1884, empowering the Commissioners to control every description of excavations. (5) All drains have been cleared of jungle and rubbish, and arrangements have been made to employ a fixed establishment on this work. (6) The jhora, which continues down past Mr. Jeffrey's house, will be converted into a stone drain, and proper connections from neighbouring houses joined to it. (7) Many of the house drains have already been connected with the road drains, and this work is progressing. (8) The bathing platform on the left of the road a little below the *Darjiling News Press* has been entirely removed. (9) The subject of cementing the drains has been considered, and an experimental drain before Hingun Durjee's house is being constructed. (10) The objectionable drain from the cookroom of St. Joseph's Seminary has been replaced by a good stone drain. (11) The urinal at Campbell Cottage has been demolished, and the drain passing below the servants' houses has been closed up, a roof gutter being substituted. (12) The worst part of the channel from Beachwood, that is the length between the cart-road and Oojagir barber's shop, has been taken up and is being remade with stones bedded in mortar. Other parts of it will receive early attention. (13) The drain behind the kutcherry has often been cleared, but to remedy the evil radically, it is necessary to open it up along its entire length. (14) As soon as funds are available, the shoot of the wire tramway will be put in hand, and then the owners of Isabel Cottage will have no grounds of complaint. (15) Two more public latrines and urinals combined have been built, and others will be commenced as soon as possible. (16) The Drum Druid latrine has been demolished. (17) The Campbell Cottage urinal no longer exists. (18) Several new private latrines have been built, and requisitions have been issued for the construction of others. (19) Steps have been taken to put a stop to the practice of throwing night-soil down the khud by prosecuting and fining the offending mehters; but it is proposed to use swing buckets carried by two men on a pole for this purpose. (20) The ironwork

of the covered market has been fixed, and the building is in rapid progress. (22) Notices have been served on the owners of private markets for the construction of latrines, which are now being built. (23) The cleanliness of the neighbourhood of the slaughter-house has received special attention, and the bones and horns of cattle slaughtered are sent to the cinerator. (24) More hydrants have been added, and it is proposed to still further increase their number. (25) It is believed that it will be most difficult, if not impossible, to change the alignment of the water-pipe through the Drum Druid and Post Office compound, but as the Drum Druid latrine no longer exists, one at least of the objections raised has disappeared. (26) The Executive Engineer will no doubt be moved to alter the alignment of the sanitarium water-pipe. (27) The suggestions about washing-places will be attended to when additional washing-places are to be provided, caste prejudices being considered. (28) Six feet having been fixed by the bye-law on the subject as the depth of a grave, that depth has been enforced. (29) The registration of births and deaths cannot be regulated by the Commissioners, as their record is kept by the police.

Kurseong.—*Inspected in August.*—The sanitary arrangements of this Municipality were in many respects satisfactory. Much improvement had been effected under each head of sanitation since the town was last inspected. There existed, however, yet several defects which called for rectification.

The suggestions were—(1) To utilize all the parts of the new Municipal Act III (B.C.) of 1884, particularly Part IX, and to frame and bring into operation a code of bye-laws to give force and better efficacy to the Municipal law. (2) To prohibit the shopkeepers from forming encroachments on the street side drains. (3) To increase the conservancy establishment, so that surface cleansing and the latrines may be better attended to. (4) To provide more public latrines, thereby obviating promiscuous defœcation. (5) To clean out the water collecting tank more frequently during the rainy season, when doing so would be unattended by inconvenience to the people. (6) To erect a bathing platform with a good big trough for the convenience of the people, thereby preventing their crowding about the hydrants for this purpose. (7) To have the graves of the Mahomedan dead dug deeper than four feet, and to keep the Police informed of all interments and cremation. (8) To employ a Municipal vaccinator, and to have his work supervised by the Superintendent of Vaccination. (9) To take steps for bringing into operation the Compulsory Vaccination Act V (B.C.) of 1880. (10) To fully utilize the provisions of the Compulsory Registration Act IV (B.C.) of 1873; to appoint specially a person to detect evasions of the law; and to get the chowkidars and constables punished under section 6 thereof if they omit to report births and deaths occurring in their beats.

Action taken on the suggestions.—The seats of the latrines have been tarred; but the carrying out of the other suggestions being expensive, they will receive consideration when the budget for the ensuing year is prepared.

Dacca Town.—*Inspected in August.*—The sanitary arrangements of this town were found to be unsatisfactory. Although some improvements had been effected in conservancy and some of the abominable "gors" had been filled up, there were still several grave defects which called for urgent attention. The drainage arrangements were very defective About half the town was being supplied with filtered water, while the arrangements for the supply of water in the other half were unsatisfactory and in some places objectionable.

The suggestions were—(1) To bring into operation all the parts of the new Municipal Act III (B.C.) of 1884, particularly Part IX. (2) To water regularly the streets during the dry weather to prevent the metal from springing. (3) To encourage all possible extension of the Buckland bund towards the west, as it would be a great improvement to the town. (4) To consider the advisability of raising a loan for giving effect to the drainage scheme, or, if this is not practicable, of undertaking the work piecemeal year by year. Till the scheme is carried out, to attend to the cleanliness of the existing drains, to do away with all shallow hollows in lanes, and to provide continuous drains properly levelled. (5) To strengthen adequately the conservancy establishment, as the existing one is insufficient to meet the requirements of so large and populous a town as Dacca. (6) To strictly prohibit the mehters from performing work on their own account. (7) To have surface cleansing fully and regularly attended to, all the bye-roads and lanes receiving attention in this matter. (8) Not to permit street sweepings, house refuse, litter, &c., to be accumulated in improper places, but to have them collected in selected places and utilized in filling up low lands. (9) To proceed perseveringly with the work of filling up the "gors." (10) Not to permit cattle dung to be accumulated at the mehter's shed and bullock depôt at Sootrapore, or elsewhere, but to have it dried for fuel or removed. (11) To provide the bullock depôt at Miranjillah with a pucca floor as soon as possible, as at present the general surface becomes muddy and broken. (12) To provide separate latrines for females. (13) To have the defect in respect to the seats in the corrugated iron latrine being exposed to view of persons passing through the passage of the latrine from one entrance to the other rectified. (14) To introduce iron latrines instead of masonry ones in those parts of the town not yet provided with public latrines, placing them when required to be permanently set up on cemented floors; and to put up one, with quite separate seats for males and females, in the centre of the locality, where a "gor," surrounded by a small number of houses, is being filled up. (15) To consider the subject of keeping on hand a few of these iron latrines, constructed on a small scale suited for

single families, so that when householders apply to the Municipality to construct latrines for them, these latrines could be supplied at their cost. (16) To construct, in place of the present masonry ones, corrugated iron urinals, consisting of a long sheet bent round acting as a shelter, and one small sheet curved and so placed that the urine would run from it directly into a bucket placed in a masonry well, cemented with Portland cement. (16) To have the gumlahs used in the latrines tarred periodically. (17) To induce the owners of such privies as are situated close to cook-rooms, sleeping apartments, or on the roofs of houses, to remove them to other unobjectionable sites. (18) To make every endeavour to suppress the remaining well-privies. (19) To have only so much night-soil placed in the trenches as, with a layer of earth over it, will not reappear on fermentation. (20) To decide on the relative position of the proposed trenching ground to the new railway buildings. (21) To require the owners of the Committeegunge and Rai Sahib's bazars to remedy the defects pointed out in connection with the drains. (22) To establish a properly constructed slaughter-house for the town. (23) To give attention to the ill-conditioned cattle that are slaughtered in the town, so that the supply of wholesome meat may be secured. (24) To have the wells which are situated near the bank of the river filled up with earth taken from the dry bed of the river in the cold season. (25) To close the Begum bazar well, which is said to be a very bad one. (26) To induce the owners of private burial-grounds to keep them in good order, and to attend to the ruinous condition of the cemetery for the Greeks. (27) To prevent inoculation, which it appears is practised clandestinely. (28) To utilize fully the provisions of the Compulsory Registration Act, and to adopt measures generally for the improvement of registration of births and deaths.

Naraingunge.—*Inspected in August.*—Decided improvement was observed to have been effected in this town since it was last inspected with regard to roads, construction of houses, and particularly conservancy, indicating that the Commissioners are not unmindful of their charge. But much yet remains to be effected before the town can be said to be in a proper sanitary condition. It is to be regretted that the Naraingunge Improvement Committee has abandoned its schemes involving sanitary improvements.

The suggestions were.—(1) To allot a larger share of the income in improving the sanitary status of the town. (2) To utilize all the parts, particularly Part IX, of the new Municipal Act III (B. C.) of 1884, and to frame and bring into operation a proper code of bye-laws. (3) To undertake systematically the filling up of swamps, stagnant water-holes, and cesspools, which abound in the town, and in doing so to limit the filling up process to one excavation at a time, attention being particularly directed to hollows among clusters of houses, and where it is possible allowing river water to run in and out of them. (4) To move the Railway authorities and Government Engineers to fill with river mud during the cold season all hollows and excavations on the lands they have taken up for public purposes, and to induce the landholders to act similarly. (5) To remove all obstructions in and encroachments over side drains and to maintain the drains in an effective working over. (6) To provide more public latrines without delay, and to consider the subject of bringing into use the iron latrines in use at the Committeegunge bazar at Dacca. (7) To provide separate latrines for females. (8) To have the gumlahs in the latrines and the drains and walls up to three feet high tarred periodically. (9) To provide wheel and hand-barrows for the conservancy of the lanes and narrow roads to which the regular carts cannot have access. (10) To carry out dry-earth system properly in the public latrines. (11) To provide public urinals in convenient parts of the town. (12) To extend Part IX of the new Municipal Act III (B.C.) of 1884, containing provisions for the management, &c., of public and private latrines, to the whole town as soon as possible, and to induce the owners of the latrines situated on the bank of ditches, old tanks, and other holes, to provide in their places proper privies constructed in the manner suggested in the last Inspection Report. (13) To induce the owners of the private markets to provide proper drains, floors, and latrines in them. (14) To make provision in next year's budget for the construction of a suitable slaughter-house. (15) To bestow attention to the suggestions regarding the water-supply of the town made in the last Inspection Report. (16) To provide public burial-grounds without delay, and when these shall have been established to prohibit strictly intramural interments. (17) To put a stop to the practice of throwing the Hindu pauper and lunatic dead into the river Megna. (18) To cause ashes to be laid down throughout the cooly lines belonging to Messrs. David & Co., and to draw the attention of the Manager of the said Company to the imperfect cleansing of the latrines in the cooly lines,and to instruct him to bring neglect on the part of the sweepers to the notice of the Vice-Chairman. (19) To utilize fully the provisions of the Compulsory Vaccination Act. (20) To adopt measures for the improvement of registration generally.

Hughli and Chinsurah.—*Inspected in November.*—Since the town was last inspected much improvement had been effected under every branch of sanitation, and there was evidence to show that the Commissioners bestow commendable interest on the sanitary concerns of their charge. On the whole, however, the sanitary arrangements of this town cannot yet be said to be quite satisfactory. There were several sanitary defects, particularly under the heads of drainage and water-supply, which called for early attention. A proposal had been under the consideration of the Commissioners for the supply of filtered water to the town, but nothing is yet known as to the conclusion arrived at.

The suggestions were—(1) To devote each year a larger share than at present of the income in improving the sanitation of the town. (2) Not to lose sight of those portions of

the new Municipal Act which relate to building regulations, European drug shops, milkmen, a water-supply scheme, and Municipal markets and slaughter-houses. (3) To frame, on an early date, a new code of bye-laws under the new enactment. (4) To utilize the rubbish available from clearances made in constructing the line towards the new railway bridge for filling up hollows and the large number of foul tanks about the town. (5) To provide a drain for the public distillery to carry off the refuse fluid which stagnates outside and is offensive (6) To construct saucer-shaped drains in the place of the old Dutch drains in Chinsurah, which are said to be in disrepair and silted up at places. (7) To have the lanes and bye-paths daily swept and cleaned, wheel or hand-barrows being used for the removal of rubbish. (8) To repair the cattle-shed before the next rainy season sets in. (9) To provide more public latrines. (10) In constructing public latrines, to have, where possible, the accommodation for males and females in separate buildings, with perfectly distinct approaches, and to cause the latrines for females to be attended to by mehtranis. (11) To provide two gumlahs in each of the cells in the latrines. (12) To set up in different parts of the town urinals consisting of a long sheet of corrugated iron bent round, acting as a shelter, and one small sheet curved and so placed that the urine would run from it directly into a bucket placed in a masonry well, cemented with Portland cement. (13) To extend to the remainder of the town Part IX of the Municipal Act, and to cause all the private latrines to be attended to by the Municipal mehters. (14) To carry out the system of trenching night-soil in a proper and inoffensive way. (15) To get portions of all the trenching grounds cultivated in rotation. (16) To invite the attention of the owners of private markets to remedy the defects in connection with their floors, drains and pathways. (17) To consider the ways and means of providing a pure water-supply for the town. (18) To make proper arrangements in the Mahomedan burial-grounds, so that the graves may be dug in lines and at regular distances. (19) To discourage burials in the two grounds near the Emambara, as they are somewhat crowded and situated too near human habitations. (20) To induce the Mahomedans to dig the graves for their dead deeper than five feet, so as to admit of the chupper usually placed over the corpse being at least four feet from the surface of the ground. (21) To try to induce the Mollahs in the Mahomedan burial-grounds to keep registers of the deceased brought for interment. (22) To utilize fully the provisions of the Compulsory Registration Act, and to adopt measures for the improvement of registration generally.

Serampore.—*Inspected in November.*—The general condition of the town was found to be bad, and parts of it were in such a state that outbreaks of cholera might have been frequently looked for. In fact it was jungly, badly drained, interspersed with old tanks and holes full of foul water; its conservancy was unsatisfactory; and the bustees required a great deal of attention.

The suggestions were—(1) To attend to the subject of allotting, year by year, a legitimate share of the income for the purpose of placing the town on a sound sanitary footing. (2) To utilize the omitted sections of Part VI of the new Municipal Act, which relate to the building regulations (3) To frame a new code of bye-laws under the new Act, and to bring it into operation when called for. (4) To carry on perseveringly the work of filling up offensive small pits and hollows. (5) To keep the existing drains in working order, and to correct the defects in the construction and level of the drains in some of the smaller streets and lanes, and to provide drains in those lanes which have none. (6) To carry out perseveringly the proposal which has been decided on by the Commissioners of constructing year by year pucca saucer drains in place of the existing deep ones. (7) To take into consideration the amount of work to be exacted from the conservancy establishment, who appeared not to perform sufficient work. (8) To look after the overseer, who seemed to be lazy and inefficient. (9) To have the whole of the streets as well as the lanes and bye-paths swept daily. (10) Not to permit the urine from the cow-sheds to run into the public drains or to soak into the ground on the spot, but to have it removed bodily and put into trenches in the night-soil ground. (11) To provide more public latrines, as the present number is quite insufficient for the requirements of the town. (12) To attend to the subject of the existence of a large number of deserted mud houses, which are said to be used by certain classes of people for purposes of nature. (13) In constructing latrines to have the accommodation for the females entirely separate from that for males, in different enclosures, with different entrances. (14) To improve some of the existing latrines in the manner pointed out during inspection. (5) To provide, in addition to the one for fœces, another gumlah in each cell of the latrines for urine and washings. (16) To have all the gumlahs in the public latrines tarred periodically. (17) To bring into operation Part IX of the Municipal Act III (B C.) of 1884 in the Rishra, Connaghur and Mohesh wards, and pending its introduction to have the private privies in these wards properly looked after in view to their being kept in a clean and wholesome condition. (18) To carry on the trenching of the night-soil in a proper and inoffensive way. (19) To establish more trenching grounds for the convenience of the Chatra, Connaghur, Rishra and Mahesh wards. (20) To have the cooly bustee opposite the Hastings Mill properly drained and provided with roads; drinking water separately, and not from the same source as that used for bathing and washing clothes; and ample, well-supervised latrine accommodation, the houses so constructed as to permit free ventilation. (21) To improve and enlarge gradually the present municipal market. (22) To induce the owners of the private markets to rectify the defects in them in connectionwith their floors, drains and water-supply. (23) To join in the

scheme for the provision of good filtered water to the riparian towns, from Serampore downwards to Howrah. (24) To close, under the provisions of the law prescribed for the purpose, all the private burial grounds, some of which are inside the enclosures of houses. (25) To lay out the graves in the burial-ground at Mullikpara in a more orderly manner, and to have the graves dug at least six feet deep to allow of the chupper which it is customary to place over a Mahomedan corpse, being four feet from the surface of the ground. (26) To have the Hindu pauper dead burnt and not buried, and to make provision for the cremation or interment of those who die from contagious diseases. (27) To fully utilize the provisions of the Compulsory Registration Act, and to adopt measures generally for the improvement of registration of births and deaths.

Howrah.—*Inspected in November and December.*—Much had been done to improve the sanitation of this town, but there were yet several very serious sanitary defects, particularly under the heads of drainage, water-supply, and the conservancy, &c., of bustees. It was evident, however, that the sanitary interests of the town engaged the active attention of the Commissioners. The question of supplying this important town with good water had been long and was even at the time of my inspection under consideration.

The suggestions were—(1) To bring into operation the omitted parts of the new Municipal Act, and to frame a code of bye-laws under the new Act. (2) To prevent the throwing of house and kitchen sewage on the ground to soak in and attract flies, but to have it removed in carts, run into trenches, and covered over with earth at the trenching grounds. (3) To provide more public latrines, so that the whole town may be affected by these conveniences, and promiscuous defæcation effectually prevented. (4) To provide separate buildings for females near the Arkutti and Golabari latrines, or to make such arrangements in the present buildings as would afford seclusion for the females who resort to it, which is very desirable. (5) To have the corrugated iron sides in the two latrines belonging to the Howrah Mills Company tarred periodically. (6) To put the dirty and unsightly mat enclosure behind the latrine close to the entrance to the Botanical Gardens, belonging to the Seebpore College, and used by the natives, into better condition. (7) To see that the latrine on Major Ramsay's plan at Sat Bigha bustee is used in the manner it is designed to act, that is, moved about regularly, and that its offensive condition is corrected. (8) To carry out the process of trenching night-soil according to the instructions given to the Secretary, and to have the work constantly supervised by the Municipal officials and the Civil Surgeon, who is the sanitary officer of the town. (9) To have the bustees properly drained, provided with good roads and facilities for conservancy, and to prevent overcrowding in them. (10) To attend to the filthy condition of the pucca drain in the Arkatti bustee. (11) To repair the latrine in the Municipal market. (12) To attend to the broken condition of the side-drains in, and to remove the heaps of rubbish lying about, Seal's market, and also to remedy the filthy condition of the drains in the Sulkea market. (13) To bring to a final issue speedily the question of supplying the town with good water; and, till this is done, to keep the reserved tanks and the river free from pollution, and to induce the people to keep their wells and tanks in a wholesome condition, and to fill up the numerous small foul water tanks with earth from the river sides. (14) To take up as early as possible another site for a Mahomedan burial-ground in the neighbourhood of Sitanath Bose's Lane. (15) To fully utilize the provisions of the Compulsory Registration Act, and to adopt measures generally for the improvement of registration.

APPENDIX No. V.

STATEMENTS EXHIBITING PARTICULARS REGARDING THE VACCINE OPERATIONS OF THE YEAR 1884-85 AND OTHER INFORMATION CONNECTED THEREWITH.

STATEMENT No. I.—*Showing particulars of Vaccination in each*

Number.	Circles and Districts.	Population.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total Number of Persons vaccinated. Males.	Females.	Total.	Average number of persons vaccinated by each vaccinator.	Primary Vaccination. Total. Males.	Females.	Total.	Successful. Under 1 year.	1 year and under 6.
1	2	3	4	5	6			7	8			9	10
	Calcutta Circle of Superintendence.												
1	Calcutta ...	433,219	54,152	19	9,118	6,837	15,955	839	7,193	6,227	13,420	4,729	6,027
	Metropolitan Circle of Superintendence.												
1	Burdwan ...	1,260,243	501	16	14,501	13,555	28,056	1,753	14,501	13,555	28,056	3,396	18,880
2	Bankura ...	960,040	388	57	10,652	10,237	20,889	366	10,592	10,217	20,809	2,065	14,898
3	Birbhum including ...	786,580	418	19	6,410	6,026	12,466	656	6,439	6,026	12,465	1,244	7,799
4	Midnapore ...	2,371,738	484	60	26,779	24,484	51,263	854	26,727	24,455	51,182	7,259	33,388
5	Hughli (including Serampore) ...	875,417	733	12	11,210	10,439	21,649	1,804	11,179	10,415	21,594	2,211	15,808
6	Howrah ...	520,753	1,149	12	7,984	7,592	15,576	1,298	7,964	7,588	15,552	2,080	11,039
7	24-Pergunnahs ...	1,365,132	680	28	23,495	22,554	46,049	1,644	23,462	22,538	46,000	5,570	34,539
8	Nuddea ...	1,477,223	571	38	24,058	21,796	45,854	1,206	24,043	21,775	45,818	5,425	33,044
9	Jessore ...	1,876,670	657	44	26,202	24,581	50,783	1,154	26,178	24,575	50,753	5,259	37,700
10	Khulna ...	1,062,251	515	26	20,366	19,184	39,550	1,521	20,362	19,180	39,542	4,244	22,817
11	Murshidabad ...	1,105,900	556	31	17,625	16,385	34,010	1,097	17,625	16,385	34,010	3,443	24,043
	Total ..	13,679,956	551	343	180,312 +	176,827 +	366,139	1,070	189,072 †	176,709 †	365,781	43,032 †	254,555 †
12	Calcutta (Bovine Vaccination Department)	...	...	3			4,760	1,587			1,033		
13	Suburbs of Calcutta ...	251,139	10,962	12	8,035	6,986	15,021	1,251	6,017	5,322	11,339	1,931	7,369
	TOTAL OF METROPOLITAN CIRCLES ...	13,931,395	561	358	197,347	183,813	385,920	1,078	195,089	182,031	378,173	44,963	261,924
	Darjiling Circle of Superintendence.												
1	Dinajpur . By licensed vaccinators ...	1,501,786	1,002	30	18,309	16,825	35,134	1,171	18,309	16,825	35,134	5,827	25,192
2	Maldah .. By ditto ditto ...	693,324	367	18	9,872	9,355	19,227	1,068	9,852	9,344	19,196	7,290	10,949
3	Rajshahye ... By ditto ditto ...	1,309,752	556	28	18,101	16,866	34,967	1,248	18,091	16,859	31,949	7,786	21,447
4	Rungpore .. By ditto ditto ...	2,084,644	599	30	24,162	22,420	46,582	1,552	24,162	22,420	46,582	6,592	37,610
5	Bogra .. By ditto ditto .	724,212	484	16	9,924	9,519	19,443	1,215	9,924	9,519	19,443	4,709	14,107
6	Darjiling .. By paid ditto ...	144,191	117	6	6,958	6,358	13,316	2,219	6,958	6,358	13,316	2,612	4,785
	By licensed ditto ...			2	962	863	1,825	912	962	868	1,825	737	910
7	Julpaiguri ... By ditto ditto	573,615	199	19	7,115	6,580	13,695	720	7,115	6,580	13,695	4,898	7,831
8	Purneah .. By ditto ditto	1,833,671	372	31	23,616	21,725	45,371	1,463	23,642	21,724	45,366	11,201	32,192
	Total .. By paid ditto ..	8,865,196	451	6	6,958	6,358	13,316	2,219	6,958	6,358	13,316	2,612	4,785
	By licensed ditto ..			174	112,091	104,153	216,244	1,242	112,057	104,133	216,190	49,000	153,238
	TOTAL OF DARJILING CIRCLE ...			180	119,049	110,511	229,560	1,275	119,015	110,491	229,506	51,612	158,023
	Ranchi Circle of Superintendence.												
1	Manbhum .. By licensed vaccinators .	984,578	257	38	15,840	15,458	31,298	823	15,840	15,458	31,208	9,923	19,933
2	Singbhum .. By ditto ditto ..	555,958	118	19	7,001	6,123	13,124	690	7,001	6,123	13,124	3,051	9,051
3	Hazaribagh .. By paid ditto	935,049	154	1	2	7	9	9	2	7	9	...	3
	By licensed ditto ...			36	11,897	11,954	23,851	662	11,897	11,954	23,851	5,407	16,160
4	Lohardugga ... By paid ditto ...	1,314,361	140	30	17,851	16,365	34,216	1,140	17,842	16,365	34,207	5,316	24,708
	By licensed ditto ..			37	13,349	12,915	26,264	709	13,349	12,915	26,264	10,160	15,007
5	Political States By ditto ditto ...	148,516	41	40	10,353	9,857	20,210	505	10,353	9,857	20,210	6,233	13,059
	Total .. By paid ditto ...	4,258,365	126	31	17,853	16,372	34,225	1,104	17,844	16,372	34,216	5,315	23,801
	By licensed ditto ...			170	58,440	56,307	114,747	674	58,440	56,307	114,747	34,774	73,210
	TOTAL OF RANCHI CIRCLE ...			201	76,293	72,679	148,972	741	76,284	72,679	148,963	40,089	97,011
	Sonthal Pergunnahs Circle of Superintendence.												
1	Sonthal Pergunnahs . By licensed vaccinators...	1,547,692	284	79	32,334	31,889	64,223	812	32,245	31,797	64,042	8,261	47,657
2	Bhagulpore By ditto ditto ...	1,751,473	439	4	1,697	1,396	3,093	773	1,697	1,396	3,093	267	2,575
	By paid ditto ...			59	25,976	24,832	50,808	861	25,971	24,829	50,800	6,313	39,292
3	Monghyr ... By do. ditto ...	1,398,556	490	9*	2,507	2,417	4,924	547	2,505	2,416	4,921	613	3,012
	Total . By paid ditto ...	4,700,691	383	50	28,483	27,249	55,732	945	28,476	27,245	55,721	6,926	43,304
	By licensed ditto ...			83	34,031	33,285	67,316	811	33,942	33,193	67,135	8,528	50,232
	TOTAL OF SONTHAL PERGUNNAHS CIRCLE			142	62,514	60,534	123,048	859	62,418	60,438	122,856	15,454	93,436
	Eastern Bengal Circle of Superintendence.												
1	Mymensing ... By licensed agency ...	2,980,335	477	71	36,772	33,992	70,764	996	36,772	33,992	70,764	6,012	47,590
2	Faridpore ... By ditto do. ...	1,600,521	711	41	19,598	19,119	38,717	944	19,598	19,119	38,717	3,440	25,995
3	Noakholli ... By paid do. ...	702,886	587	40	26,940	23,459	50,399	1,259	26,940	23,459	50,399	4,211	33,852
	By licensed do. ...			3	157	113	270	90	157	113	270	50	150
	By honorary do. ...			...	1,126	888	2,014	.....	1,126	888	2,014	165	1,039
4	Dacca ... By paid do. ...	2,012,330	720	1	1,502	1,326	2,828	2,828	1,502	1,326	2,828	190	1,688
	By licensed do. ...			51	20,521	19,607	40,128	786	20,521	19,607	40,128	8,582	27,801
5	Tipperah ... By paid do. ...	1,488,280	601	94	75,131	73,055	148,186	1,576	75,131	73,053	148,186	10,195	71,820
	By licensed do. ..			15	3,483	3,530	7,013	467	3,483	3,530	7,013	1,280	4,130
	By honorary do. ..			......	3,207	2,875	6,082	....	3,207	2,875	6,082	219	2,840
6	Backergunge... By paid do. ...	166,284	715	Work done during recess.	519	387	906	......	519	387	906	11	190
7	Pubna ... By licensed do. ...	1,275,421	692	33	15,443	14,329	29,772	902	15,443	14,829	29,772	4,759	22,409
	Total ... By paid do. ...	10,220,078	599	115	104,092	98,227	202,319	1,757	104,092	98,227	202,319	14,607	97,550
	By licensed do. ...			214	100,307	94,453	194,760	910	100,307	94,453	194,760	20,117	132,104
	TOTAL OF EASTERN BENGAL CIRCLE ...			329	204,399	192,680	397,079	1,206	204,399	192,680	397,079	34,724	229,654

* The same vaccinators

† The particulars according to Sex, Age and Class of 4,760 operations performed by the Bovine

rcle of Superintendence during the year 1884-85.

		Re-vaccination.							Percentage of successful cases.		Religion of the number vaccinated.					Average annual number of persons successfully vaccinated during the previous five years.		Average number of deaths from small-pox during previous five years.	
		Total.			Successful.						Total number vaccinated of—								
Above 6 years.	Total at all ages.	Males.	Females.	Total.	Under 1 year.	1 year and under 6.	Above 6 years.	Total at all ages.	Primary.	Re-vaccination.	Hindus.	Mahomedans.	Christians.	Other races.	Persons successfully vaccinated per 1,000 of population.	Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
11	12	13			14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1,215	12,871	1,925	610	2,535	...	..	283	283	98·58	13·20	9,002	4,972	854	137	30·86	7,688	17·74	172	·39
5,844	28,030	......	......	......	...	...	......	...	99·97	......	23,449	4,690	7	......	22·25	......	......	110	·08
3,778	20,741	60	14	74	...	2	47	49	99·67	70·	20,252	631	...	......	21·15	......	......	80	·08
3,308	12,436	1	......	1	...	...	1	1	99·78	100·	10,788	1,678	...	......	15·81	......	......	11	·01
10,358	51,005	52	20	81	...	7	58	65	99·67	80·24	48,702	2,561	..	......	21·54	......	......	1,282	·54
3,540	21,559	31	24	55	...	...	14	14	99·83	25·45	17,939	3,704	6	...	24·64	......	......	65	·07
1,517	15,542	20	4	24	..	..	1	1	99·93	4·16	12,575	3,001	...	......	29·34	......	......	17	·03
5,818	45,027	33	16	49	..	..	38	38	99·84	77·55	27,055	18,869	125	......	33·67	......	......	82	·06
6,509	45,638	15	21	36	.	5	13	18	99·72	50·	17,135	28,065	356	......	30·90	......	......	117	·07
7,580	50,548	24	6	30	...	1	17	18	99·63	60·	19,565	31,218	5	......	26·94	......	......	26	·01
12,443	30,504	4	4	8	...	3	1	4	99·84	......	18,361	21,170	19	......	30·69	......	......	125	·11
6,461	33,947	......	......	......	..	...	......	...	99·94	50·	16,218	17,792		......	37·19	......	......	14	·01
67,310	364,897	240	118	358		18	190	208	99·79	58·75	232,339	133,282	518	......	26·68	400,967	29·31	1,920	·14
†	850	†	†	3,707	†	†	†	1,083	92·89	50·90	†	†	†	†	6·58	......	......	......	......
1,340	10,040	2,018	1,664	3,682	...	28	1,439	1,467	98·33	46·92	10,104	4,795	122	......	48·15	10,160	40·40	144	·57
68,650	376,387	2,258	1,782	7,747	.	46	1,629	3,658	99·73	53·87	242,443	138,077	640	......	27·27	411,127	29·51	2,073	·14
3,901	34,920	......	......	......	...	..	..	..	99·96	......	16,236	18,895	...	13	23·25	......	......	59	·03
978	19,177	20	11	31	...	.	22	22	99·97	70·96	8,961	10,208	2	56	27·69	......	......	79	·11
2,596	34,820	10	8	18	...	...	..	......	99·92	......	7,162	27,805	...	......	26·59	......	......	15	·01
2,110	46,318	......	......	......	...	..	......	......	99·90	......	18,201	28,375	...	6	22·21	......	......	591	·28
697	19,443	......	......	......	...	...	......	...	100·	......	3,589	15,854	...	......	26·81	......	......	2	·002
4,545	11,932	......	......	......	...	...	......	......	100·	......	12,104	158	19	1,035	89·75	......	......	} 22	·15
165	1,812	......	......	......	..		......	......	99·04	......	1,652	95	...	78	12·56	......	......		
781	13,610	......	......	......	..		......	......	99·72	..	9,036	4,120	9	230	23·55	......	......	120	·20
1,733	45,120	4	1	5	..	3	2	5	99·80	100·	23,034	22,332	5	......	24·61	......	......	142	·07
1,585	11,482	......	......	...	...	..	......	......	100·	......	12,104	158	19	1,035	1·34	135,693	15·31	......	......
12,897	215,185	34	20	54	.	3	24	27	99·89	50·	87,861	127,984	16	383	24·27	173,742	19·59	......	......
17,432	227,067	34	20	54	..	3	24	27	99·90	50·	99,965	128,142	35	1,418	25·61	309,435	34·90	1,030	·11
1,206	31,062	......	......	......		..	......	......	99·60	......	30,323	912	63	......	31·54	......	......	47	·04
761	12,863	......	......	......		..	..	.	98·41	......	13,036	39	49	......	23·13	......	......	68	·12
..	8	......	......	......	...	..	......	...	33·33	......	9	......	...	......	·003	......	......	} 133	·14
1,212	22,779	......	......	......	..	...	......	..	98·25	......	22,225	1,626	.	......	24·36	......	......		
2,974	32,087	9	......	9	.	...	9	9	99·29	100·	31,846	2,367	3	......	24·12	......	......	} 637	·53
567	25,734	......	......	......	...	...	...	......	99·16	......	24,377	761	1,120	......	19·57	......	......		
780	20,072	......	......	......	...	..	......	...	99·52	......	20,183	27	...	......	42·84	......	......	......	...
2,974	32,090	9	......	9	...	...	9	9	99·27	100·	31,855	2,367	3	......	7·51	41,168	9·66	......	......
4,526	112,510	......	......	......	...	..	......	..	99·07	......	110,114	3,365	1,238	......	26·42	95,512	22·43	...	......
7,500	144,000	9	......	9	..	...	9	9	99·12	100·	141,969	5,732	1,241	......	33·95	136,680	32·09	916	·22
7,679	63,597	80	92	181	...	18	110	128	99·57	74·85	29,911	5,115	58	29,139	41·17	......	......	98	·06
2 6	3,048	......	......	......	...	...	......	......	98·54	......	2,592	501	...	......	1·73	......	......	} 603	·34
4,895	50,500	5	3	8	...	2	1	3	99·74	87·50	44,791	4,068	43	1,908	28·78	......	......		
368	4,891	2	1	3	...	...	2	2	99·41	66·66	4,475	320	7	122	3·19	......	......	337	·24
5,261	55,391	7	4	11	..	2	3	5	99·71	45·45	49,266	4,386	50	2,030	11·78	63,779	13·56	......	
7,885	66,645	80	92	181	...	18	110	128	99·32	74·85	32,503	5,616	58	29,139	14·20	43,041	9·16	......	.
13,146	122,036	96	96	192	...	20	113	133	99·01	73·07	81,769	10,002	108	31,169	25·98	106,820	22·72	1,038	·22
16,523	70,725	......	......	......	...	...	......	......	99·96	......	18,789	51,474	1	500	23·73	......	......	461	·15
9,247	38,082	......	......	......	...	...	......	......	99·96	......	17,411	21,119	187	......	24·16	......	......	289	·18
22,300	50,363	......	......	......	...	...	......	......	99·94	......	9,675	40,718	6	......	71·65	......	......	} 599	·85
70	270	......	......	......	...	...	......	......	100·	......	56	233	1	......	·38	......	......		
820*	2,014	......	......	......	...	...	......	......	100·	......	475	1,539	..	......	2·86	......	......		
922	2,800	......	......	......	...	...	......	......	99·07	......	768	2,058	2	.	1·49	......	......	} 120	·05
8,033	40,106	......	......	......	...	...	......	......	99·94	......	15,999	23,712	417	......	19·93	......	......		
66,032	148,047	......	......	......	...	...	......	......	99·90	......	35,111	113,067	8	......	99·47	......	......	} 359	·24
1,001	7,011	......	......	......	...	...	......	......	99·97	......	2,148	4,865	...	.	4·71	......	......		
3,000	6,079	......	......	......	...	...	......	......	99·95	......	1,501	4,581	..	......	4·08	......	......		
705	806	......	......	......	...	...	......	......	100·	......	672	334	...	......	5·65	......	......	7	·04
2,531	29,759	......	......	......	...	...	......	......	99·98	......	6,654	23,143	..	5	23·33	......	......	6	·004
80,959	202,116	......	......	......	...	...	......	......	99·90	......	46,126	156,177	16	......	15·77	153,797	15·04	......	......
42,425	194,646	......	......	......	...	...	......	......	99·96	......	63,013	130,636	606	505	19·04	141,764	13·87	.	..
32,384	396,762	......	......	......	...	...	......	......	99·93	......	109,139	286,813	622	505	58·82	295,561	28·9[illegible]	1,841	18

worked in Bhagulpore.

cination establishment in Calcutta have not been furnished, as no records of them have been kept.

STATEMENT No. I. -*Showing particulars of Vaccination in eac*

Number.	Circles and Districts.	Population.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total Number of Persons vaccinated. Males.	Females.	Total.	Average number of persons vaccinated by each vaccinator.	Primary Vaccinatio[illegible] Total. Males.	Females.	Total.	Succe[illegible] Under 1 year.	1 year and under 6.
1	2	3	4	5	6			7	8			9	10
	Orissa Circle of Superintendence.												
1	Cuttack ... By paid vaccinators	1,736,129	495	30	18,714	14,831	33,545	1,118	18,708	14,817	33,525	1,051	27,64[illegible]
2	Pori ... By paid vaccinators	466,827	322	8 from Cuttack.	2,987	2,704	5,691	711	2,987	2,704	5,691	229	4,56[illegible]
3	Tributary Estates of Barambа, Mourbhanjh and Atghar ... By paid vaccinators	446,588	98	14 do.	4,266	3,469	7,735	553	4,266	3,469	7,735	1,304	3,98[illegible]
	Total of Orissa Circle ...	2,649,544	278	30	25,967	21,004	46,971	1,565	25,961	20,990	46,951	3,484	36,20[illegible]
	Behar Circle of Superintendence.												
1	Patna ... By paid agency ...	1,524,038	740	35 from Shahabad	1,542	1,485	3,027	86	1,513	1,457	2,970	530	2,11[illegible]
	Patna ... By licensed ditto ...			83	9,120	7,900	17,020	205	9,120	7,900	17,020	1,065	14,97[illegible]
2	Shahabad By paid ditto	1,224,414	631	57	17,893	16,815	34,708	608	17,864	16,796	34,660	2,682	26,95[illegible]
	Total ... By paid ditto ...	2,748,452	689	57	19,435	18,300	37,735	662	19,377	18,253	37,630	3,212	29,07[illegible]
	Total ... By licensed ditto ...			83	9,120	7,900	17,020	205	9,120	7,900	17,020	1,065	14,97[illegible]
	Total of Behar Circle			140	28,555	26,200	54,755	391	28,497	26,153	54,650	4,277	44,0[illegible]
	Grand Total of all Circles. By paid agency	47,806,940	305	332	219,941	201,343	476,634	1,283	215,918	198,994	415,965	42,816	248,90[illegible]
	Grand Total of all Circles. By licensed ditto ...			1,067	504,301	472,925	976,226	915	502,938	472,695	975,633	156,516	678,31[illegible]
	Grand Total of all Circles. Total ...			1,399	723,242	674,258	1,402,260	1,002	718,856	671,689	1,391,598	199,332	927,2[illegible]

OFFICE OF SANITARY COMMR. FOR BENGAL,
The 15th May 1885.

STATEMENT No. II.—*Showing the cost of Vaccination in*

	Circles.	Establishment. Superintendents of circles.	Deputy Superintendents.	Native Superintendents.	Inspectors of licensed vaccinators.	Total.	Vaccinators. Head vaccinators.	First class vaccinators.	Total.	Second and third class vaccinators.	Apprentices.	Total.	Clerks.	Menial servants.	Total.	Expen[illegible] Pay of establishment.	Travelling allowances.
1	2	3	4	5			6			7			8			9	10
																Rs. A. P.	Rs. A. P.
	Calcutta	1	2	...	..	3	3	5	8	14	...	14	...	1	1	5,350 13 6	560 0 0
	Metropolitan Circles	1	4	...	39	44	..	...	...	...	...	...	3	6	9	27,098 9 4	9,938 0 0
	Calcutta (Bovine Vaccination Department).	.	1	..	1	2	...	1	1	2	..	2	1	8	9	2,809 14 2	......
	Suburbs of Calcutta ...	...	1	...	..	1	3	4	7	8	..	8	...	...	...	3,622 4 7	360 0 0
	Total of Metropolitan Circles.	1	6	...	40	47	3	5	8	10	...	10	4	14	18	33,590 12 1	10,298 0 0
	Darjiling Circle ...	1	2	...	11	14	1	6	7	...	...	...	2	4	6	19,952 7 7	4,279 1 9
	Ranchi " ...	1	1	2	4	8	...	.	...	39	...	39	1	3	4	11,571 0 0	1,150 0 0
	Sonthal Pergunnahs " ...	1	...	...	10	11	3	9	12	50	...	50	1	2	3	10,085 6 1	3,281 15 11
	Eastern Bengal " .	1	1	1	5	8	6	45	51	31	39	70	2	3	5	15,490 15 9	2,802 13 0
	Orissa " ...	1	...	...	...	1	3	10	13	16	4	20	1	1	2	4,845 15 10	1,250 8 6
	Behar " ..	1	...	2	2	5	4	10	14	34	13	47	1	1	2	8,444 0 4	1,260 0 6
	Total of Vaccination Circle.	8	12	5	72	97	23	90	113	194	56	250	12	29	41	1,09,331 6 2	24,051 7 2
	Municipalities	...	...	...	...	...	...	...	...	213	...	213	...	...	...	10,702 5 8	......
	Total .	8	13	5	72	97	23	90	113	407	56	463	12	29	41	1,20,033 11 10	24,051 7 2

OFFICE OF SANITARY COMMR. FOR BENGAL,
The 15th May 1885.

Circle of Superintendence during the year 1884-85—Concluded.

...l,		Re-vaccination.								Percentage of successful cases.		Religion of the number vaccinated.				Persons successfully vaccinated per 1,000 of population.	Average annual number of persons successfully vaccinated during the previous five years.		Average number of deaths from small-pox during previous five years.	
		Total.			Successful.							Total number vaccinated of—								
Above 6 years.	Total at all ages.	Males.	Females.	Total.	Under 1 year.	1 year and under 6.	Above 6 years.	Total at all ages.	Primary.	Re-vaccination.	Hindus.	Mahomedans.	Christians.	Other races.		Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
11	12	13			14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
3,201	32,800	6	14	20	...	6	14	20	98·21	100·	33,113	314	88	... ..	18·[illegible]	...	....	2,984	1·71
814	5,609	......	......	......	...	...	......	......	98·73	..	5,667	24	...	......	12·[illegible]	......	..	655	1·40
2,217	7,508	......	......	......	...	...	.. .	......	97·98	......	7,708	... ..	27	... ..	16·81	...	...	... .	.
6,232	45,917	6	14	20	...	6	14	20	98·23	100·	46,518	338	115	..	17·33	48,897	16·56	3,639	1·37
195	2,840	29	28	57	...	2	11	13	97·86	22·80	2,463	562	2	......	1·87	......	. ..	534	·35
777	16,817	......	......	.....	. .	...	.... .	......	99·26	... ..	15,692	1,327	...	1	11·03	... ..	..		
4,674	34,811	29	19	48	. .	7	13	20	99·37	43·47	32,030	2,677	...	1	28·03	. ...	.. ..	42	·07
4,869	37,151	58	47	105	...	9	24	33	99·25	32·03	34,493	3,239	2	1	13·52	18,919	6·88	......	.. .
777	16,817	......	......	......	...	...	......	......	99·26	.....	15,692	1,327	...	1	6·11	... .	.	.. ...	... ..
5,646	53,968	58	47	105	...	9	24	33	99·25	32·03	50,185	4,566	2	2	10·64	18,919	6·88	626	·22
116,385	408,958	4,023	2,339	10,069	...	45	1,772	3,800	98·76	43·56	240,458	176,432	1,181	3,203	8·63	475,101	9·94	. ....	......
135,820	970,650	363	230	593	...	39	324	363	99·73	62·69	511,552	402,210	2,436	30,028	20·31	855,026	17·88	.. ...	......
252,205	1,379,608	4,386	2,569	10,662	...	84	2,096	4,163	99·60	44·75	782,010	578,642	3,617	33,231	28·94	1,330,127	27·82	11,[illegible]	·23

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

each Circle of Superintendence during the year 1884-85.

...diture.		Paid from							
Contingencies.	Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipalities.	Native States.	Total.	Number of successful primary and re-vaccination.	Average cost of each successful case.
11	12	13	14	15	16	17	18	19	20
Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.		Rs. A. P.
716 10 2	6,627 6 8	......	2,750 0 0	......	3,877 6 8	......	6,627 6 8	13,154	0 8 1
516 3 6	37,552 12 10	......	37,552 12 10	......	.....	... ..	37,552 12 10	365,105	0 1 8
2,151 14 9	5,021 12 11	......	5,021 12 11	.....	......	......	5,021 12 11	2,823	1 12 4
975 10 8	4,957 15 3	......	2,074 4 7	......	2,883 10 8	... ..	4,957 15 3	12,107	0 6 7
3,643 12 11	47,532 9 0	......	44,648 14 4	......	2,883 10 8	......	47,532 9 0	380,045	0 2 0
1,109 6 3	25,430 15 7	......	25,430 15 7	......	... ..	. . ..	25,430 15 7	227,094	0 1 10
141 0 0	12,871 0 0	......	12,631 0 0	......	... .	240 0 0	12,871 0 0	144,609	0 1 5
216 15 6	13,584 5 6	......	13,584 5 6	......	......	.. ..	13,584 5 6	12[illegible],109	0 1 9
294 6 6	18,648 3 3	... ..	18,048 3 3	......	... ..	..	18,618 3 3	396,762	0 0 9
187 0 0	6,288 7 10	6,283 7 10	... ..	......	......	323 5 1	6,606 12 11	45,9[illegible]7	0 2 4
64 8 0	9,768 8 10	9,768 8 10	......	......	. .	......	9,768 8 10	54,001	0 2 11
6,463 11 4	140,746 8 8	16,052 0 8	1,17,093 6 8	......	6,761 1 4	563 5 1	1,11,069 13 9	1,383,771	0 1 8
......	10,702 5 8	100 0 0	... .	487 5 10	9,500 10 8	614 5 2	10,702 5 8	78,823	0 2 2
6,463 11 4	1,51,448 14 4	16,152 0 8	1,17,093 6 8	487 5 10	16,261 12 0	1,177 10 3	1,31,772 3 5	1,462,594	0 1 7

R. LIDDERDALE, M.D.,
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Sanitary Commissioner for Bengal.

STATEMENT No. III.—*Showing particulars of Vaccination performed by Vaccinators attached*

DISTRICTS.	Number of Municipalities, Dispensaries, &c., in the District to which Vaccinators were attached.	Number of Vaccinators attached to the Municipalities, Dispensaries, &c., in the District during the season.	TOTAL NUMBER OF PERSONS VACCINATED.			Total number of persons vaccinated in 1883-84.	Average number of persons vaccinated by each vaccinator.	PRIMARY VACCINATION.						
								Total.			Successful.			
			Males.	Females.	Total.			Males.	Females.	Total.	Under 1 year.	1 and under 6 years.	Above 6 years.	TOTAL OF ALL AGES.
Burdwan	6	7	1,470	1,288	2,758	2,987	394	1,405	1,269	2,674	420	1,423	731	2,574
Bankura	2	2	949	774	1,723	1,361	861	914	760	1,674	111	1,122	410	1,643
Birbhum	1	1	123	154	277	260	277	122	151	273	14	135	101	250
Midnapore	6	6	2,293	1,822	4,115	768	686	2,241	1,797	4,038	457	2,236	1,136	3,829
Hughli including Serampore	8	10	2,308	1,778	4,086	4,530	409	2,261	1,743	4,004	491	2,160	873	3,524
Howrah	2	5	2,476	2,270	4,746	5,547	949	2,446	2,260	4,706	545	3,679	426	4,650
24-Pergunnahs .. .	16	19	4,054	3,001	7,055	4,125	403	3,944	3,538	7,482	1,053	4,555	1,748	7,356
Nuddea	9	9	1,317	1,215	2,532	2,534	281	1,273	1,209	2,482	144	1,504	764	2,412
Jessore	4	5	399	335	734	475	147	399	333	732	51	331	309	691
Khulna	4	4	475	406	881	6	220	468	405	873	54	613	195	862
Murshidabad . .	4	6	1,628	1,183	2,811	3,419	468	1,569	1,158	2,727	244	1,657	781	2,682
Dinajpur	1	2	166	115	311	171	155	138	102	240	32	142	42	216
Rajshahye	3	3	511	463	974	527	324	506	436	942	143	552	239	934
Rungpore	2	2	184	153	337	365	168	180	148	328	39	207	64	310
Bogra	4	4	287	296	583	262	146	287	296	583	118	373	86	577
Pubna	2	3	892	781	1,673	....	558	879	771	1,650	205	1,162	258	1,625
Darjiling	2	2	693	623	1,316	1,587	658	689	574	1,263	487	263	513	1,263
Julpaiguri	3	2	23	17	40	15	20	21	15	36	9	18	9	36
Dacca	3	5	2,598	1,725	4,323	2,243	864	2,443	1,653	4,076	558	1,730	1,737	4,025
Faridpore	5	6	639	438	1,077	2,586	179	639	438	1,077	16	99	47	162
Backergunge	5	5	437	287	724	333	145	396	269	665	17	170	439	626
Mymensing	8	10	1,377	1,234	2,610	1,800	261	1,376	1,233	2,609	203	1,472	841	2,516
Tipperah	3	3	908	776	1,684	3,581	562	907	774	1,681	266	1,035	246	1,547
Chittagong	2	2	110	111	221	690	110	110	111	221	23	100	7	130
Noakhali	2	2	107	54	161	651	81	107	54	161	5	69	40	114
Patna	8	19	3,496	2,182	5,678	7,366	299	3,409	2,117	5,526	1,764	2,968	193	4,925
Gya	6	7	1,018	795	1,813	3,254	259	974	781	1,755	86	1,130	151	1,370
Shahabad	8	9	2,213	1,710	3,923	4,023	436	2,185	1,681	3,866	762	2,174	463	3,399
Mozufferpore ..	5	5	1,401	967	2,368	[illegible]	474	1,392	965	2,357	783	1,314	54	2,151
Durbhanga	5	8	2,186	1,924	4,110	4,039	514	2,179	1,919	4,098	143	3,590	36	3,769
Sarun	6	11	1,212	1,047	2,259	2,874	205	1,177	1,025	2,202	313	1,414	182	1,909
Chumparun	5	8	235	160	395	725	49	228	155	383	15	211	50	276
Monghyr	3	6	4,814	2,634	7,448	5,751	1,241	4,606	2,567	7,173	1,383	5,213	412	7,008
Bhagulpore	2	9	703	589	1,292	863	144	646	553	1,199	134	789	119	1,042
Purneah	1	1	222	195	417	414	417	213	184	397	76	266	39	381
Maldah ...	2	2	779	485	1,064	1,288	582	558	467	1,025	115	562	289	968
Sonthal Pergunnahs	4	4	257	270	527	.. .	132	257	269	526	147	318	40	505
Cuttack	8	11	1,653	1,307	2,960	1,351	269	1,580	1,273	2,853	191	1,731	296	2,218
Poori	1	3	192	147	339	420	113	192	147	339	9	208	24	241
Balasore	1	1	723	374	1,097	......	1,097	723	374	1,097	38	784	198	1,020
Hazaribagh	3	3	195	167	362	157	121	172	156	328	23	205	6	234
Lohardugga	3	3	617	535	1,152	1,186	384	617	535	1,152	269	759	92	1,120
Singbhum	1	1	75	77	152	65	152	75	77	152	62	68	10	140
Manbhum	4	4	178	150	328	26	82	142	142	284	36	153	74	263
GRAND TOTAL ...	180	240	48,423	37,613	86,036	76,865	358	47,025	36,879	83,904	12,054	50,673	14,770	77,497

OFFICE OF SANY. COMMR. FOR BENGAL,
The 15th May 1885.

to Municipalities, Dispensaries, &c., in the Province of Bengal during the year 1884-85.

Re-vaccinations.							Number vaccinated among				Percentage of successful cases.		Remarks.
Total.			Successful.										
Males.	Females.	Total.	Under 1 year.	1 and under 6 years.	Above 6 years.	Total of all ages.	Hindus.	Mahomedans.	Christians.	Other races.	Primary.	Re-vaccination.	
65	19	84	......	1	41	42	1,854	899	5	.....	97·33	50·00	
35	14	49	......	15	20	35	1,089	31	3	......	98·20	74·46	
1	3	4	......	1	3	4	192	79	6	......	92·25	100·	
52	25	77	5	22	33	60	3,482	595	38	......	95·10	78·04	
47	35	82	......	9	21	30	3,478	550	52	...	91·01	36·58	
30	10	40	......	4	32	36	2,918	1,814	14	....	99·31	90·	
110	63	173	13	22	86	121	4,994	2,599	62	......	99·40	71·17	1 was licensed vaccinator.
44	6	50	......	1	8	9	1,705	722	45	....	97·49	18·	
......	2	2	......	2	......	2	320	404	10	......	95·70	100·	
7	1	8	1	4	3	8	495	386	......	......	99·08	100·	
59	30	89	......	5	59	64	1,871	908	11	21	98·93	72·72	
58	13	71	8	5	30	43	180	127	3	1	96·00	71·87	
5	27	32	......	......	26	26	560	404	6	4	99·25	81·25	1 was licensed vaccinator.
4	5	9	......	......	7	7	103	132	12	....	95·09	77·77	
......	......	......	......	......	......	......	322	259	2	....	99·14	......	
13	10	23	......	2	7	9	442	1,217	14	......	98·60	39·13	2 were licensed vaccinators.
4	49	53	......	7	46	53	239	49	96	332	100·	100·	
2	2	4	......	......	4	4	26	11	8	......	100·	100·	1 was licensed vaccinator.
175	72	247	12	13	187	212	2,335	1,890	98	......	99·04	85·82	2 were licensed vaccinators.
......	......	......	......	......	......	......	808	205	4	...	76·05	......	3 ditto ditto.
41	18	59	......	5	22	27	200	501	23	......	96·75	45·76	4 ditto ditto.
1	......	1	......	......	1	1	1,074	1,533	3	......	98·20	100·	4 ditto ditto.
1	2	3	......	......	3	3	946	725	13	......	92·02	100·	1 was licensed vaccinator.
......	......	......	......	......	......	......	113	108	2	......	62·20	......	
......	......	......	......	......	......	......	50	105	......	......	72·61	...	
87	65	152	......	13	43	56	3,764	1,826	88	......	93·70	36·84	2 were licensed vaccinators.
44	14	58	......	2	13	15	1,466	334	13	....	93·35	40·54	
28	29	57	......	......	18	18	2,509	1,391	33	......	88·74	31·57	
9	2	11	1	......	3	4	1,586	773	9	......	91·08	36·36	
7	5	12	......	6	5	11	3,496	605	9		93·73	91·66	
35	22	57	5	8	25	38	1,374	874	11	......	87·68	70·37	
7	5	12	......	1	8	9	254	125	11	5	73·60	75·00	
208	67	275	......	17	178	195	6,652	731	65	......	97·69	70·90	
57	36	93	......	6	39	45	981	274	37	......	86·90	48·38	
9	11	20	......	1	8	9	291	121	5	......	96·94	45·00	
21	18	39	2	12	23	37	541	621	2	......	94·24	94·87	
......	1	1	......	......	1	1	461	64	2	......	96·00	100·	1 was licensed vaccinator.
73	34	107	3	6	36	45	2,687	78	127	68	78·76	16·39	
......	......	......	......	......	......	......	335	1	3	......	76·75	......	
......	......	......	......	......	......	......	962	135	...	......	92·98	......	
23	11	34	......	2	3	5	230	106	26	......	75·72	16·66	1 was licensed vaccinator.
......	......	......	......	......	......	......	592	271	245	44	97·22	......	2 were licensed vaccinators.
......	......	......	......	......	......	......	122	1	29	......	93·33	......	1 was licensed vaccinator.
36	8	44	......	1	38	39	321	3	4	......	92·60	88·63	1 ditto ditto.
1,398	734	2,132	44	193	1,089	1,326	59,836	24,481	1,244	475	94·72	63·75	

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

COMPARATIVE STATEMENT NO. IV.—*Showing the number of Persons primarily Vaccinated and the number of those Persons who were successfully Vaccinated in each of the undermentioned Official years.*

Establishment.	Persons primarily vaccinated.																			
	Years ended 31st March.																			
	1875-76.		1876-77.		1877-78.		1878-79.		1879-80.		1880-81.		1881-82.		1882-83.		1883-84.		1884-85.	
	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.	Total number.	Number successfully vaccinated.
Government	746,223	728,400	1,079,965	1,061,923	898,622	875,139	506,487	493,620	616,343	604,111	808,8[illegible]	888,200	881,185	823,212	653,023	672,185	378,797	373,291	353,104	376,941
Municipal	59,707	53,905	84,531	79,411	86,875	80,467	73,148	67,683	67,305	56,847	53,032	49,627	62,588	59,403	61,951	58,250	65,518	59,254	104,518	95,389
Local Funds	507	294	978	883	1,145	530	1,354	1,053	1,709	1,426	526	469	355	259	......	......	......	......	......	......
Native States	1,965	1,740	3,502	3,073	3,010	2,512	3,329	2,934	3,090	3,156	4,462	3,881	1,374	1,212	13,130	16,994	37,203	31,967	31,637	30,676
Dispensaries	15,243	13,120	20,010	17,796	22,919	20,028	10,475	9,292	8,956	7,505	3,780	2,846	6,027	5,532	11,329	9,580	6,591	3,684	4,020	3,521
Work done by ex-inoculators.	245,355	202,234	296,610	284,451	238,226	205,820	682,009	665,453	1,021,130	1,098,651	422,763	414,178	437,619	425,400	474,207	466,934	868,550	856,717	955,423	950,578
TOTAL ...	1,068,800	999,693	1,485,956	1,447,537	1,240,860	1,185,496	1,276,900	1,239,435	1,717,483	1,681,906	1,383,763	1,530,267	1,339,448	1,315,199	1,246,646	1,223,943	1,350,519	1,324,853	1,475,502	1,457,105

OFFICE OF SANITARY COMMR. FOR BENGAL,
The 15th May 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

A.

***Statement showing the deaths from Small-pox during the year* 1884-85 *in the* THANAHS IN WHICH VACCINATIONS WERE PERFORMED**

CIRCLES.	DISTRICTS.	THANAHS.	POPULATION.	DEATHS DURING— April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.
		Calcutta	433,219	115	86	64	23	10	3	6	4	9	17	25	32	304	·90
	Burdwan ...	Burdwan	27,330	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Culna	81,583	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranigunge	135,646	...	1	10	1	...	...	...	...	...	...	1	6	19	·14
		Assensole	98,842	1	4	2	...	...	...	...	...	1	2	6	3	10	·19
		Sahebgunge	75,171	5	12	...	...	1	...	...	12	3	...	...	1	34	·45
		Khandghose	54,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Royna	97,190	1	...	...	1	1	...	1	2	3	1	1	...	11	·11
		Gangoor	102,718	...	...	...	1	...	...	...	...	...	...	...	...	1	·009
		Selimabad	71,709	1	...	...	...	...	...	...	...	1	...	2	2	6	·08
		Ausgram	97,311	...	...	...	...	...	...	...	...	...	...	3	9	12	·12
		Ketugram	73,723	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mongolkot	73,543	3	12	8	2	1	1	9	3	...	8	4	7	58	·78
		Cutwa	70,334	...	...	1	1	...	...	...	...	1	5	12	10	39	·55
		Bood-Bood	79,073	...	...	...	...	...	...	...	...	...	1	2	3	6	·07
		Purbasthalli	82,070	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Kaksa	38,989	1	1	...	...	...	...	...	...	...	...	...	...	2	·05
		Total ...	1,260,213	13	30	21	6	8	1	10	17	9	17	31	50	208	·16
	Bankura ...	Bishenpore	119,595	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gangajulghati	172,607	1	...	...	...	...	...	...	...	...	...	...	2	3	·01
		Bankura	108,804	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ondah	119,321	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shonamookhi	80,016	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Kotulpore	94,964	2	7	3	1	1	...	...	...	...	...	...	...	14	·14
		Indas	78,809	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Soopol	99,122	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Raipore	95,802	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	969,016	4	7	3	1	1	...	...	...	...	1	...	2	19	·01
	Birbhum ...	Soori	118,891	...	1	2	...	...	...	...	...	...	...	...	...	3	·02
		Doobrajpore	126,566	...	...	...	...	...	...	...	...	...	...	...	5	5	·03
		Rampurhat	87,774	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bolpur	107,893	...	1	1	2	...	...	...	...	...	...	...	...	4	·08
		Sakulipore	122,723	2	4	5	3	2	...	...	2	1	...	1	...	20	·16
		Moureswar	88,836	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nulhati	133,897	...	...	...	...	...	...	...	...	...	...	...	1	1	·007
		Total ...	786,580	2	6	8	5	2	...	...	2	1	...	1	6	33	·04
	Midnapore ...	Tumlook	74,005	1	...	...	1	...	...	5	2	1	1	...	1	12	·16
		Muslundpor	80,569	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Contai	130,554	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chandrakona	58,510	...	...	1	1	...	...	...	...	...	...	...	...	2	·03
		Gurbetta	135,786	...	3	...	...	...	...	...	...	1	4	4	1	13	·10
		Midnapore	128,546	...	...	...	1	...	...	...	...	2	1	...	...	4	·03
		Naraingbar	120,199	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dantoon	128,147	...	...	...	2	...	...	...	...	...	...	...	2	4	·02
		Gopibullobpore	139,928	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhargram	59,782	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Binpur	90,704	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Salboni	53,617	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Keshpur	95,609	...	...	...	5	2	1	...	1	...	...	...	...	9	·09
		Daspur	115,269	8	3	2	1	...	...	2	3	...	...	1	1	21	·18
		Debra	70,126	1	...	2	...	6	4	5	2	...	...	...	6	26	·37
		Sabong	201,714	1	2	3	3	...	3	...	2	3	1	...	2	20	·09
		Panskurah	142,081	2	2	2	3	6	4	...	...	5	7	4	8	43	·30
		Suttahatta	54,624	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nundigram	121,806	...	...	...	...	...	2	...	...	...	...	2	...	4	·03
		Egra	63,417	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Khajri	42,126	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pataspur	87,324	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhagbanpur	96,451	1	...	...	...	1	...	...	...	...	...	...	...	2	·02
		Ghattal	71,455	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	2,371,738	15	10	10	17	15	14	12	10	12	11	11	21	161	·06
	Hooghli ...	Polba	39,142	1	1	1	1	...	...	...	...	...	...	...	1	5	·12
		Hooghli	15,458	1	3	...	...	...	...	...	...	...	...	...	...	4	·25
		Dhuniakhalli	93,687	2	1	2	...	2	...	...	...	...	...	1	...	8	·08
		Balagar	48,218	...	...	...	...	...	...	...	...	...	...	1	2	3	·06
		Panduah	66,113	...	5	1	...	...	1	...	...	...	...	3	2	12	·18
		Jehanabad	99,905	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Khanacool	133,300	4	2	...	...	1	...	...	...	...	...	...	...	7	·05
		Ghoghat	111,121	...	...	...	2	...	...	...	...	...	...	...	1	3	·02
		Total ...	606,794	8	12	5	3	3	1		...	...	...	5	6	43	·07
	Serampore ...	Singoor	44,198	...	1	...	...	...	...	1	...	...	...	...	...	2	·04
		Haripal	84,933	6	3	...	...	...	1	...	...	...	...	...	...	10	·11
		Chunditola	84,887	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Krishnagore	55,107	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	268,623	6	4	1	...	..	1	1		..	...	...	...	13	·04
	Howrah ...	Doomjoor	128,477	...	2	...	...	3	1	2	...	...	...	1	...	9	·07
		Ulubaria	81,345	1	...	...	...	...	...	...	...	...	...	1	...	2	·02
		Jugutbullubpur	77,530	...	1	...	...	...	...	...	1	...	...	6	12	20	·25
		Ampta	109,968	...	3	...	...	...	...	...	...	...	...	...	1	4	·03
		Bagnan	63,563	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shampur	68,861	...	1	...	...	...	...	...	1	...	...	...	...	2	·02
		Total ...	529,753	1	7	...	...	3	1	2	2	..	..	8	13	37	·06

Statement showing the deaths from Small-pox during the year 1884-85 *in the* Thanahs in which Vaccinations were performed—continued.

Circles.	Districts.	Thanahs.	Population.	Deaths during— April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	Total.	Ratio of deaths per 1,000 of population.
	24-Pergunnahs	Barrackpore	14,082	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dum-Dum	8,073	...	...	...	...	2	1	...	...	...	...	...	...	3	·37
		Baraset	62,698	3	2	3	...	4	...	...	...	...	...	...	...	12	·19
		Hosseinabad	67,227	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Baduria...	111,070	...	...	...	...	...	...	6	3	...	...	...	...	9	·08
		Baripore	72,088	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Joynagore	68,455	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Diamond Harbour	52,828	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tallygunge	47,793	2	1	1	3	...	1	2	2	...	2	1	...	15	·31
		Atchipore	62,536	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Bistopore	71,717	...	...	2	...	...	...	...	...	...	...	...	...	2	·02
		Sonarpore	31,858	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhangor	78,852	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Deganga	53,516	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Habra	62,811	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Naihatti	65,429	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bassirhat	55,887	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Harwa	49,292	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Canning	47,518	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sultanpore	90,319	...	...	...	...	...	...	...	...	1	...	...	...	1	·01
		Debipore	43,453	...	...	...	...	...	...	...	...	...	...	1	...	1	·02
		Bankipore	107,275	...	...	...	1	...	...	...	...	...	...	...	...	1	·009
		Mathurapore	50,453	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	1,365,132	5	3	6	4	6	2	8	5	1	3	2	...	45	·03
	Nuddea	Krishnaghur	77,887	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Kushtia	17,726	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kumerkhalli	92,206	1	1	...	...	...	...	...	...	...	...	...	...	2	·02
		Ranaghat	71,411	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chagdah	55,631	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jogooli	38,306	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Meherpore	65,954	3	...	...	...	...	...	...	...	...	...	...	...	3	·04
		Hanskhalli	45,440	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kishengunge	32,701	...	...	...	...	...	...	...	...	...	...	...	3	3	·09
		Chupra	63,509	...	...	...	...	...	...	...	...	1	...	...	...	1	·01
		Nakasipara	59,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaligunge	54,192	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tohatta	89,160	9	2	2	...	...	...	...	...	...	...	...	1	14	·15
		Kurimpore	102,764	40	15	6	8	6	2	...	...	...	...	...	...	77	·74
		Gangni	74,955	2	6	3	...	2	3	1	...	...	...	...	...	17	·22
		Dowlutpore	74,178	...	...	1	...	...	...	...	...	...	...	...	...	1	·01
		Nowpara	136,713	1	...	...	...	...	...	1	1	...	...	...	...	3	·02
		Bhadulia	68,184	...	...	...	...	2	...	...	...	1	...	...	...	3	·04
		Alumdanga	89,947	3	2	2	...	...	...	...	...	...	...	...	...	7	·07
		Damurhuda	63,014	...	1	...	...	...	...	...	...	...	...	...	...	1	·01
		Kalupole	39,396	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jibunnagar	40,120	5	4	4	...	...	...	...	...	...	...	...	...	13	·32
		Santipore	24,177	...	...	...	...	...	...	...	...	...	...	...	1	1	·04
		Total ...	1,477,223	65	31	18	8	10	5	2	1	2	...	...	5	147	·09
	Jessore	Moheshpore	109,082	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bongong	59,668	...	...	...	...	...	...	...	...	...	...	1	...	1	·01
		Garriapatta	61,052	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sarsha	79,046	3	3	...	...	...	...	...	...	...	2	...	...	8	·10
		Kotwalli	158,859	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kesubpore	85,450	...	...	3	1	...	...	...	...	...	...	...	...	4	·04
		Jhenidah	102,627	...	...	...	...	...	...	...	...	...	1	...	...	1	·009
		Kotchandpore...	34,807	...	1	...	...	...	...	...	...	...	...	...	...	1	·02
		Magura	159,162	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Narail	151,362	1	...	1	...	...	...	...	...	...	...	...	...	2	·01
		Bagarpara	63,902	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Moniranpore	155,611	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Godkhalli	67,420	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalligunge	89,202	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shalkhia...	50,464	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mamudpore	83,677	...	...	...	1	...	...	...	...	...	...	...	...	1	·01
		Kulia	72,947	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Lohargura	103,863	...	...	...	2	1	...	...	...	...	...	...	...	3	·02
		Salikopa	138,305	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gaighatta	50,228	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	1,876,679	4	4	4	4	1	...	...	...	...	3	1	...	21	·01
	Khulna	Khulna	127,390	...	...	...	...	2	...	...	...	...	...	...	...	2	·01
		Dumuria	109,020	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bitaghatta	37,501	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Paikgatcha	70,478	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagirhat	137,818	1	2	...	...	...	...	...	...	...	...	...	...	3	·02
		Mollahat	50,478	...	3	4	...	...	...	...	...	...	...	...	...	7	·13
		Rampal	49,827	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Morelgunge	62,670	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Satkhera	87,876	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalaroos	77,053	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Magura	48,212	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Assasuni	62,412	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaligunge	140,610	...	1	...	...	...	...	...	...	...	...	...	...	1	·007
		Total ...	1,062,251	1	6	4	...	2	...	...	...	...	...	...	...	13	·01

Statement showing the deaths from Small-pox during the year 1884-85 *in the* THANAHS IN WHICH VACCINATIONS WERE PERFORMED—continued.

CIRCLES.	DISTRICTS.	THANAHS.	POPULATION.	DEATHS DURING— April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.
	Murshidabad	Sujaganj	8,345	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gorabazar	12,633	1	...	...	...	...	...	...	...	...	...	...	...	1	·07
		Barna	67,912	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bharathpur	108,025	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shahanagar	9,523	...	1	...	...	...	...	...	...	...	...	...	1	2	·21
		Assanpur	11,177	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Raghunathganj	57,269	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dewansarai	55,036	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gona	78,423	...	...	...	...	...	...	...	1	...	...	...	...	1	·01
		Jellinghi	108,508	...	...	...	1	2	...	...	...	...	...	...	...	3	·02
		Doulatabazar	39,568	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Hariharpara	57,135	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nowada	47,559	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gokarna	42,446	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhudrihat	27,859	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhagowangola	57,238	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Shamserganj	69,536	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Sooti	68,556	12	1	...	...	...	...	...	...	...	...	...	...	13	·19
		Mirzapur	45,496	...	...	...	1	...	...	...	...	...	...	...	...	1	·02
		Khargram	54,018	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Burwah	79,659	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Monullabazar	1,979	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	1,105,900	14	2	...	2	2	...	...	1	...	...	...	2	23	·02
		Suburbs of Calcutta	251,439	47	34	23	11	5	3	1	4	4	7	10	20	169	·67
		TOTAL OF METROPOLITAN CIRCLES	13,931,395	185	156	103	61	53	28	36	42	29	45	69	125	932	·06
	Dinajpur	Dinajpur	417	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Rajarampore	190,409	...	...	1	4	6	...	5	...	1	...	...	...	17	·08
		Birganj	139,891	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Thakurgaon	220,397	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ranisonkoil	75,102	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pirgange	93,880	...	1	...	...	...	...	...	...	...	...	...	1	2	·02
		Hemtabad	85,287	...	2	15	1	...	...	...	...	...	...	...	...	18	·21
		Nawabganj	61,637	...	1	1	...	...	...	...	...	...	...	...	...	2	·03
		Kaliaganj	94,882	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Banshihari	81,877	...	2	...	...	...	...	...	...	...	...	1	...	3	·03
		Patnitollah	69,238	...	...	3	2	...	...	...	...	...	...	...	...	5	·07
		Mohadebpore	67,265	...	...	...	...	1	...	...	...	...	...	...	...	1	·01
		Parsha	48,586	...	...	...	...	2	...	...	...	...	...	...	...	2	·04
		Patiram	70,661	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gangarampore	74,491	2	1	...	...	2	...	...	...	...	...	...	...	5	·06
		Chintamon	52,058	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Parbatipore	66,708	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	1,501,786	2	7	20	7	11	...	5	...	1	...	1	1	55	·03
	Rajshahye	Nattore	144,568	2	...	...	...	...	...	...	...	...	...	4	...	6	·04
		Ialpore	84,962	2	...	...	...	...	...	...	...	...	...	...	...	2	·02
		Bagmara	121,581	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Naugaon	85,840	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manda	103,308	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Putia	121,238	...	...	...	...	...	...	...	...	...	...	...	1	1	·008
		Singra	112,607	...	...	...	...	...	...	...	...	...	...	...	1	1	·008
		Beauleah	81,096	...	...	...	...	...	...	...	...	...	1	...	...	1	·01
		Borigram	121,554	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Charghat	124,160	...	3	...	...	...	...	...	...	...	...	...	...	3	·02
		Godagari	43,799	...	...	...	...	...	...	...	...	...	...	...	3	3	·06
		Panchipore	79,431	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tanore	85,609	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	1,309,753	4	3	...	...	...	...	...	...	...	1	4	5	17	·01
	Rungpore	Kaliganj	155,607	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ullipore	215,213	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sadullapore	112,563	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Darwani	143,390	...	1	...	...	...	...	...	...	...	...	1	...	2	·01
		Nesbutganj	124,507	...	1	...	...	...	...	...	...	...	...	...	...	1	·008
		Mahiganj	116,210	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jaldaha	163,672	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dimlah	138,762	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barabari	142,512	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kowrganj	88,019	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nageswari	177,229	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mitapuker	99,053	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pirgungo	69,008	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhawaniganj	57,803	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Sunderganj	91,469	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Govindganj	189,027	...	...	1	...	...	...	...	...	...	...	...	1	2	·01
		Total	2,084,644	...	2	1	...	...	...	...	...	...	...	1	1	5	·002
	Bogra	Bogra	216,750	1	...	...	...	...	...	...	...	...	...	...	...	1	·004
		Shariakandi	103,228	...	...	...	...	...	...	2	...	...	...	...	...	2	·01
		Sherpore	43,496	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shibganj	59,080	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Panchbibi	66,724	1	...	...	...	...	...	...	...	...	...	...	...	1	·01
		Badalgatchi	39,374	...	1	...	...	...	...	...	...	...	...	...	...	1	·02
		Adamdighi	94,534	...	...	2	1	...	...	...	3	1	2	1	1	11	·11
		Khettal	40,023	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dhunut	61,003	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	724,212	2	1	2	1	...	...	2	3	1	2	1	1	16	·02

Statement showing the deaths from Small-pox during the year 1883-84 *in the* THANAHS IN WHICH VACCINATIONS WERE PERFORMED—*continued.*

Circles.	Districts.	Thanahs.	Population.	Deaths during— April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	Total.	Ratio of deaths per 1,000 of population.
	Darjiling	Darjiling	45,360	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Phansidwa	63,241	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kurseong	22,967	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalimpong	12,683	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	144,191	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Julpaiguri	Sikurpore	80,178	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Boda	178,643	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Julpaiguri	67,171	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pataram	64,636	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mynaguri	66,451	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Alipur	32,086	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Keranti	82,453	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Dhupguri	51,697	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	573,615	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Purneah	Purneah	138,704	...	...	...	...	...	...	...	...	...	...	...	4	4	·03
		Kusba Amour	121,889	...	...	...	...	...	...	...	...	...	1	...	...	1	·009
		Dhamdaha	109,391	...	...	...	...	...	...	...	...	...	1	2	...	3	·02
		Gandwara	123,945	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Arana	200,012	...	1	...	...	...	...	...	...	...	...	...	...	1	·004
		Matiari	94,115	3	...	...	...	...	...	...	...	...	...	...	...	3	·03
		Ranigunge	107,552	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kissenganj	158,100	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bahadurganj	196,142	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kaliaganj	277,059	...	...	...	...	...	...	...	4	7	...	...	...	11	·03
		Kadwa	134,275	...	...	...	...	1	...	...	...	4	1	...	1	7	·05
		Balrampur	115,031	...	1	3	3	8	...	1	1	...	...	...	...	17	·14
		Manihari	51,456	...	...	...	...	...	...	...	1	...	...	...	...	1	·01
		Total	1,833,671	3	2	3	3	9	...	1	6	11	3	2	5	48	·02
	Maldah	English Bazar	72,615	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Maldah	46,200	...	1	...	...	...	...	...	...	...	...	...	...	1	·02
		Gazole	54,317	...	...	...	...	...	4	...	...	...	...	2	...	6	·11
		Ratna	89,024	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kharba	103,051	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Gomastapur	52,810	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Kalachuck	115,692	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Shibganj	102,162	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nababganj	66,453	2	...	...	...	...	...	...	...	...	...	...	...	2	·03
		Total	693,324	2	1	...	...	...	4	...	...	...	...	2	...	9	·01
	Total of Darjiling Circle.		8,865,196	13	16	26	11	20	4	8	9	13	6	11	13	150	·01
	Manbhum	Purulia	177,187	...	1	2	...	...	...	...	...	...	...	...	...	3	·01
		Jaipore	24,258	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Jhalda	67,133	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bagmundi	33,384	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ichagar	61,242	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barabhum	133,847	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Manbazar	68,615	...	...	...	1	...	...	...	...	...	...	...	...	1	·01
		Roghunathpore	102,553	1	...	...	...	...	...	...	...	...	...	...	...	1	·009
		Gourandi	45,793	...	...	...	...	...	...	...	...	...	...	2	5	7	·15
		Para	39,740	...	...	1	2	...	...	...	...	...	...	...	...	3	·07
		Chass	89,173	...	...	...	...	...	...	...	...	4	2	...	...	6	·06
		Govindpore	39,673	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nirsha	50,627	2	...	1	3	...	...	...	...	...	...	...	...	6	·11
		Topechansi	48,013	...	2	2	...	...	...	...	...	...	1	...	...	5	·01
		Total	984,538	3	3	6	6	...	...	...	...	4	3	2	5	32	·03
	Singbhum	Chaibassa	205,652	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Chuckerdharpur	76,408	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ghatsilla	165,709	1	...	...	...	...	...	...	...	...	...	...	...	1	·006
		Seraikela	77,062	2	5	3	5	...	...	...	...	...	...	...	...	15	·19
		Kharsowan	31,127	...	...	...	...	...	...	...	...	1	...	...	...	1	·03
		Total	555,958	3	5	3	5	...	...	...	...	1	...	...	...	17	·03
	Hazaribagh	Hazaribagh	87,718	35	30	22	4	...	4	...	...	...	...	...	...	95	1·08
		Chattra	52,118	12	15	16	9	4	...	...	2	1	2	1	3	65	1·24
		Gowan	53,375	23	12	52	6	...	...	...	...	...	...	...	...	93	1·74
		Bagodar	59,302	7	15	7	3	9	4	...	1	2	...	1	...	49	·82
		Simuria	37,029	...	...	3	1	3	...	...	2	1	4	5	2	21	·56
		Kashmar	47,094	6	1	1	9	4	1	...	...	1	7	1	1	32	·67
		Chowparan	70,437	2	4	3	...	1	3	...	...	1	...	...	...	14	·19
		Pachamba	86,097	7	4	2	...	1	...	...	...	...	...	...	...	14	·16
		Juggeswar	53,593	9	24	24	7	3	2	...	6	4	3	...	2	84	1·50
		Burhi	52,054	4	9	18	1	7	1	...	...	2	4	1	1	48	·92
		Kharakdiha	150,545	...	6	1	...	...	...	...	...	...	1	1	1	10	·06
		Huntergunge	56,954	5	8	3	1	1	3	2	...	1	2	1	1	28	·49
		Ramgarh	72,953	1	...	...	...	1	3	...	...	...	...	...	...	5	·06
		Tandwa	55,780	8	10	5	12	2	1	3	11	7	...	3	...	62	1·11
		Total	935,049	119	138	157	53	36	22	5	22	20	23	14	11	620	·66

Statement shewing the deaths from Small-pox during the year 1884-85 *in the* THANAHS IN WHICH VACCINATIONS WERE PERFORMED—concluded.

CIRCLES.	DISTRICTS.	THANAHS.	POPULATION.	DEATHS DURING April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	Total.	RATIO OF DEATHS PER 1,000 OF POPULATION.
	Lohardugga	Daltongunge	56,762	...	...	4	2	10	6	...	8	9	5	9	24	77	1·35
		Ranchi	122,152	10	3	9	9	2	3	...	2	...	...	...	...	38	·31
		Lodhma	67,988	...	...	6	2	1	...	...	5	...	...	...	...	14	·20
		Choreya	50,220	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Turpa	104,140	5	12	10	4	3	...	3	...	1	...	...	...	38	·36
		Korambe	89,078	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Silli	68,335	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Barway	51,080	...	...	...	...	...	...	3	...	...	...	...	...	3	·53
		Balumat	66,253	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Baresand	14,667	1	...	...	...	...	...	...	...	...	...	...	...	1	·06
		Munika	48,093	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Patan	79,635	...	...	...	...	...	3	2	...	...	3	...	8	16	·20
		Chatarpur	36,591	...	...	...	...	...	...	...	...	...	...	...	4	4	·10
		Garwa	69,856	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ramkanda	64,309	...	...	...	...	...	...	...	...	...	...	...	3	3	·04
		Hussenabad	102,515	...	3	...	...	...	...	...	...	...	2	...	3	8	·07
		Lohardugga	122,028	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Tamar	95,698	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	1,314,304	16	18	29	17	16	12	8	15	10	10	9	42	202	·15
		Political states	468,516	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL OF RANCHI CIRCLE	4,258,365	141	164	195	81	52	34	13	57	35	36	25	58	871	·20
	Sonthal Pergunnahs.	Dumka	361,111	...	3	3	2	2	...	...	...	...	...	...	...	10	·02
		Rajmehal	243,474	2	1	...	3	2	2	...	...	1	1	1	2	15	·06
		Pakour	204,919	6	2	...	1	5	...	...	1	1	2	...	...	18	·08
		Deoghur	389,665	32	4	17	12	9	7	4	1	4	7	14	19	133	·34
		Godda	348,493	3	2	3	3	...	...	...	...	1	6	3	10	54	·09
		Total	1,547,662	43	12	23	21	18	9	4	5	10	16	18	31	210	·13
	Bhagulpore	Colgong	186,565	23	37	16	25	12	2	2	1	10	9	8	20	168	·90
		Banka	134,227	8	17	12	8	2	...	1	...	3	2	2	5	60	·44
		Muddehpurah	262,678	4	1	4	...	...	...	...	...	...	...	...	...	9	·03
		Kishengunge	135,328	1	...	1	...	...	...	...	...	...	...	...	1	6	·04
		Bhagulpore	100,379	8	36	25	8	3	3	2	1	1	...	2	3	92	·91
		Sultangunge	98,427	28	39	27	3	7	...	8	2	3	...	1	2	120	1·21
		Bihpore	98,403	2	11	9	2	...	...	...	...	...	...	...	...	24	·24
		Soopole	299,042	2	...	...	...	...	...	...	...	...	...	2	1	5	·01
		Partabgunge	153,272	...	...	...	...	...	...	1	...	...	...	...	...	1	·006
		Umerpore	208,508	7	25	12	18	9	1	1	1	2	2	6	6	90	·43
		Kotareah	77,644	1	2	3	...	1	...	3	...	...	...	...	1	11	·14
		Total	1,754,473	84	168	112	64	34	6	18	8	19	13	21	39	586	·33
	Monghyr	Surajgurha	166,263	19	14	1	1	...	...	...	...	...	...	...	...	35	·21
		Monghyr	94,253	4	...	3	1	...	...	...	1	...	1	...	1	11	·11
		Jamalpur	6,201	1	...	...	...	1	...	...	...	...	...	...	...	2	·31
		Khargpur	143,079	54	57	56	30	11	4	3	6	3	...	2	...	226	1·50
		Beguserai	379,794	36	28	5	1	...	...	...	...	...	3	52	80	205	·53
		Sekundra	122,389	1	...	2	1	1	1	1	...	4	...	...	2	13	·10
		Jamui	120,563	45	24	20	2	...	1	...	...	...	1	...	3	96	·79
		Gogri	365,954	4	3	...	...	...	...	...	...	...	2	6	23	38	·10
		Total	1,308,556	164	126	87	36	13	6	4	7	7	7	60	109	628	·44
		TOTAL OF SONTHAL PERGUNNAHS CIRCLE.	4,700,691	291	306	222	121	65	21	26	20	36	36	99	179	1,422	·30
	Mymensing	Jamalpore	103,238	...	...	1	...	...	...	...	...	...	...	...	...	1	·005
		Kishorgunge	122,705	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Atia	442,119	1	...	...	...	...	...	2	...	...	...	2	...	5	·01
		Kutwali	267,104	...	...	...	...	...	...	...	...	1	...	...	...	1	·003
		Fulpore	114,467	...	...	1	...	...	...	...	...	...	...	1	1	3	·02
		Issorgunge	229,452	...	...	...	1	...	...	3	...	...	...	...	...	4	·01
		Gufferganon	117,759	...	...	...	...	...	...	2	1	...	...	...	...	3	·02
		Sherpore	178,289	...	...	...	...	1	...	...	...	...	2	...	...	3	·01
		Dewangunge	101,372	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bazitpore	200,258	...	2	...	...	...	...	...	...	...	...	1	2	5	·02
		Nickley	122,459	...	...	...	...	...	...	...	...	...	...	...	5	5	·03
		Pingnah	76,268	...	...	...	...	...	...	2	...	...	...	...	2	4	·05
		Gopalpore	217,730	...	...	2	...	...	...	...	...	...	1	...	...	3	·01
		Netrokonah	471,658	23	6	5	2	3	5	...	5	1	5	...	...	55	·11
		Durgapore	116,457	1	...	...	...	...	...	...	...	...	...	...	...	1	·008
		Total	2,980,335	25	8	9	3	4	5	9	6	2	8	4	10	93	·03
	Faridpur	Furreedpore	81,288	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhushna	107,415	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Awanpore	100,257	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Bhanga	164,389	4	1	1	1	...	...	...	...	...	...	...	...	7	·04
		Muksudpore	156,933	...	1	6	...	...	...	...	...	...	...	...	...	7	·04
		Madaripore	153,619	...	...	...	...	...	...	...	1	...	1	...	...	2	·01
		Kotalipara	66,158	...	...	...	...	...	...	...	...	...	...	2	...	2	·03
		Gopalgunge	85,341	...	...	...	...	...	...	...	...	...	...	...	1	1	·01
		Shibchar	116,043	1	...	...	...	...	...	...	...	...	...	...	...	1	·008
		Palong	256,250	...	1	...	...	...	...	...	...	...	...	...	...	1	·003
		Goalundo	76,254	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pangsha	141,981	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Belgachi	94,598	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total	1,600,521	5	3	7	1	...	...	...	1	...	1	2	1	21	·01
	Noakholli	Fenny	132,697	4	3	3	...	...	...	1	...	8	4	5	4	32	·24
		Chagalnaya	109,278	2	1	...	...	...	...	...	...	...	...	...	...	3	·02
		Bamni	41,731	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Begumgunge	128,933	12	4	1	...	...	...	...	...	...	...	...	...	17	·13
		Lakhipore	113,321	14	2	3	2	6	6	8	3	3	3	2	1	48	·42
		Sudharam	96,184	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ramgunge	80,742	32	25	10	3	5	4	4	6	8	2	...	...	90	1·22
		Total	702,886	64	35	17	5	11	10	8	9	19	9	7	5	199	·28

Statement shewing the deaths from Small-pox during the year 1884-85 *in the* THANAHS IN WHICH VACCINATIONS WERE PERFORMED—concluded.

Circles.	Districts.	Thanahs.	Population.	Deaths during.													Ratio of deaths per 1,000 of population.
				April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.	Total.	
	Dacca	Lalbagh	164,287	13	16	25	7	17	10	24	13	10	...	...	28	163	·99
		Kapasia	119,515	2	...	..	...	...	...	...	...	...	...	...	1	3	·02
		Rupganj	164,159	...	1	...	...	...	...	...	...	...	...	...	...	1	·006
		Munshiganj	243,163	1	2	4	3	...	2	1	4	5	5	3	5	35	·14
		Sreenagar	275,984	2	...	...	1	...	...	...	...	...	...	...	...	3	·01
		Manickganj	172,907	...	..	...	...	...	...	...	...	1	...	...	1	2	·01
		Harirampur	100,009	...	1	...	...	...	...	...	...	...	...	...	...	1	·000
		Shabhar	174,831	13	9	3	...	...	...	...	...	...	...	...	...	25	·14
		Raipura	202,738	...	...	...	...	...	...	...	...	...	...	1	...	1	·004
		Narayanganj	91,199	1	...	1	...	...	...	...	...	...	...	...	...	2	·02
		Nawabganj	160,235	2	2	...	...	...	...	2	...	...	4	4	7	21	·13
		Jafferganj	143,012	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	2,012,339	34	31	33	11	17	12	27	17	16	9	8	42	257	·12
	Tipperah	Brahmanbaria	223,751	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Nobinagar	175,971	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Comillah	125,879	...	...	...	..	...	...	...	...	...	...	...	...	...	...
		Chanduria	78,521	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Muradnagar	152,322	...	...	...	...	...	...	...	...	...	...	1	2	3	·01
		Daudkandi	143,222	2	...	...	...	...	...	2	3	1	7	6	3	24	·16
		Chandpur	112,034	15	8	8	6	4	11	3	18	38	27	9	5	152	·32
		Laksham	86,872	2	...	...	...	...	1	...	...	...	...	...	...	3	·03
		Jagganathdighi	103,218	1	...	...	...	...	...	...	...	...	...	...	...	1	·009
		Kasba	114,152	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Haziganj	172,347	11	6	2	2	...	...	...	...	1	...	4	5	31	·17
		Total ...	1,488,289	31	14	10	8	4	12	5	21	40	34	20	15	214	·14
	Backergunge...	Sharupkatti	160,284	3	2	...	...	...	1	...	...	...	...	...	...	6	·03
	Pubna	Serajganj	198,148	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Doolai	186,363	1	..	...	...	...	...	...	...	...	...	...	...	1	·005
		Chatmohar	133,467	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Mathura	102,486	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Pubna	174,381	3	1	4	...	...	...	...	...	...	...	...	...	8	·04
		Shazadpore	216,494	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Ullapara	171,711	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Raiganj	92,374	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		Total ...	1,275,424	4	1	4	..	...	...	...	...	...	...	...	...	9	·007
		TOTAL OF EASTERN BENGAL CIRCLE.	10,220,078	166	94	80	28	36	40	49	54	77	61	41	73	799	·07
	Cuttack	Cuttack	155,335	3	2	2	5	...	...	3	1	...	2	4	2	24	·15
		Jajpore	250,738	24	8	5	10	5	1	...	2	2	11	23	36	127	·50
		Kendrapara	175,328	8	2	1	1	...	...	2	...	1	10	18	27	70	·39
		Aul	91,015	18	8	6	5	3	...	...	...	...	5	19	17	81	·88
		Salepore	249,979	39	20	8	8	4	...	2	1	...	18	44	39	183	·73
		Tirtol	183,677	21	13	7	3	3	1	...	...	2	1	21	25	97	·52
		Jaggatsingpore	215,001	9	6	7	...	..	...	...	2	2	2	17	11	56	·25
		Patamundi	109,401	16	15	3	7	2	..	...	...	...	7	33	30	113	1·03
		Dharamsala	248,762	46	31	11	3	3	1	2	1	6	19	85	63	271	1·08
		Banki	56,900	1	2	...	6	2	1	7	5	11	8	9	7	59	1·03
		Total ...	1,736,129	185	107	50	48	22	4	16	12	24	83	273	257	1,081	·62
	Poori	Khurda	269,478	3	6	3	3	5	6	13	22	24	32	27	24	168	·62
		Poori	197,349	2	1	2	2	1	...	1	1	6	3	5	8	32	·16
		Total ...	466,827	5	7	5	5	6	6	14	23	30	35	32	32	200	·42
		Tributary State of Mourbhanj, Baramba & Atghur	446,588	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		TOTAL OF ORISSA CIRCLE...	2,649,544	190	114	55	53	28	10	30	35	54	118	305	289	1,281	·48
	Patna	Dinapore	67,012	8	4	2	1	...	...	...	...	...	...	...	...	15	·22
		Maner	98,510	32	33	21	15	15	...	1	1	...	...	...	...	118	1·19
		Barrh	170,589	39	27	22	6	2	2	...	3	...	1	...	7	109	·63
		Futuah	88,051	7	10	5	1	...	...	...	...	...	1	1	...	25	·28
		Behar	233,312	2	5	6	2	4	...	...	3	6	3	2	2	35	·15
		Attaserai	78,932	6	5	4	6	5	...	...	1	1	2	...	...	30	·38
		Sillao	91,477	11	12	17	2	...	...	...	...	...	...	1	2	45	·49
		Patna	27,674	22	121	25	6	3	...	...	1	6	...	...	9	193	6·97
		Bankipore	97,001	36	30	19	5	1	...	...	...	...	...	...	2	93	·95
		Masauri	120,618	16	23	42	23	8	5	2	25	14	11	15	37	221	1·83
		Bikram	180,362	45	65	47	35	10	5	6	10	22	16	23	64	348	1·93
		Mokamah	93,824	1	1	2	5	3	...	...	1	...	...	...	3	16	·01
		Hilsa	176,075	18	33	8	6	2	4	1	...	3	3	14	26	118	·67
		Total ...	1,524,038	243	369	220	113	53	16	10	45	52	37	56	152	1,366	·89
	Shahabad	Dumraon	242,103	3	4	1	2	6	2	...	1	9	6	4	15	53	·21
		Belouti	195,879	1	15	9	3	...	1	...	...	9	11	4	14	67	·34
		Arrah	281,437	12	7	4	2	3	...	2	4	12	8	6	14	74	·26
		Dhungaon	179,916	...	2	2	2	1	...	...	...	...	...	...	1	8	·04
		Buxar	145,587	1	2	8	1	...	4	1	...	...	...	3	4	24	·16
		Peero	179,492	6	8	3	1	2	6	14	14	27	64	10	15	169	·94
		Total ...	1,224,414	23	38	27	11	12	13	17	19	57	89	27	63	395	·32
		TOTAL OF BEHAR CIRCLE...	2,748,452	266	407	247	124	65	29	27	64	109	126	83	215	1,761	·64
		GRAND TOTAL FOR THE PROVINCE.	47,806,940	1,366	1,343	992	502	329	169	195	265	362	445	658	984	7,610	·15
		Municipalities, Dispensaries, &c.	2,764,715	763	464	206	98	45	26	74	25	30	43	61	121	1,956	·70
		GRAND TOTAL ...	50,571,655	2,129	1,807	1,198	600	374	195	269	290	392	488	719	1,105	9,566	·18

OFFICE OF SANY. COMMR. FOR BENGAL,
The 15*th May* 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

B.

Statement showing the Total Deaths registered from Small-pox IN ALL THE DISTRICTS *of the Bengal Province during each month of the year* 1884-85.

DISTRICTS.	POPULATION.	NUMBER OF DEATHS DURING.												TOTAL.	RATIO OF DEATHS PER 1,000 OF POPULATION.	REMARKS.
		April 1884.	May 1884.	June 1884.	July 1884.	August 1884.	September 1884.	October 1884.	November 1884.	December 1884.	January 1885.	February 1885.	March 1885.			
Calcutta	433,219	115	86	64	23	10	3	6	4	9	17	25	32	394	·90	
Burdwan	1,391,823	21	36	25	7	6	5	12	18	12	19	39	54	254	·18	
Bankura	1,041,752	4	7	3	1	1	...	...	...	...	1	...	2	19	·01	
Birbhum	794,428	2	8	8	5	2	...	...	2	1	..	1	6	35	·04	
Midnapore	2,515,565	18	11	13	17	15	14	12	10	12	14	11	21	168	·06	
Hugli and Serampore	1,015,005	20	28	8	5	5	2	3	1	...	...	5	6	83	·08	
Howrah	635,381	6	11	2	3	3	4	2	2	2	3	9	13	60	·09	
24-Pergunnahs	1,618,420	10	11	12	7	6	2	8	5	1	11	7	14	94	·05	
Suburbs of Calcutta	251,439	47	34	23	11	5	3	1	4	4	7	10	20	169	·67	
TOTAL OF 24-PERGUNNAHS ...	1,869,859	57	45	35	18	11	5	9	9	5	18	17	34	263	·14	
Nuddea	1,655,721	67	34	18	8	10	8	5	7	8	1	1	6	173	·08	
Jessore	1,939,375	4	4	4	4	1	..	...	...	...	3	1	...	21	·01	
Murshidabad	1,226,790	18	2	...	2	3	1	...	1	...	...	...	2	29	·02	
Khulna	1,079,948	1	6	4	...	2	...	...	...	...	...	...	...	13	·01	
Dinajpur	15,14,346	3	7	20	7	11	...	5	...	1	...	1	1	56	·03	
Rajshahye	1,338,638	6	6	8	4	4	1	1	6	10	1	8	10	65	·04	
Rungpore	2,097,964	...	2	1	...	...	...	...	..	...	...	1	1	5	·002	
Bogra	734,358	2	1	2	1	...	...	2	3	1	2	1	1	16	·02	
Pubna	1,311,728	4	1	4	..	...	...	...	...	..	.	...	1	10	·007	
Darjiling	156,137	...	...	...	...	..	...	...	...	...	...	...	...	....	......	
Julpaiguri	581,562	...	..	...	.	..	...	...	...	...	...	...		.....	...	
Dacca	2,116,350	49	61	63	28	26	12	32	23	22	48	56	91	511	·24	
Faridpore	1,631,734	5	3	7	1	...	...	..	1	...	1	5	1	24	·01	
Backergunge	1,900,889	28	13	5	5	7	4	4	6	15	21	41	53	202	·10	
Mymensing	3,051,966	25	8	9	3	4	5	9	6	2	8	6	11	96	·03	
Tipperah	1,519,338	32	14	10	8	4	12	5	21	40	34	20	15	215	·14	
Chittagong	1,132,341	...	1	...	...	...	...	...	1	...	1	...	...	3	·002	
Noakhali	820,772	64	85	17	5	11	10	8	9	19	11	13	9	261	·31	
Patna	1,756,856	463	378	224	113	53	16	11	45	53	49	70	152	1,627	·92	
Gya	2,124,682	715	685	448	265	119	60	20	23	70	19	82	144	2,690	1·26	
Shahabad	1,964,909	49	84	57	25	17	18	17	31	67	98	44	97	604	·30	
Mozufferpore	2,582,060	54	59	51	10	4	6	5	...	3	9	25	46	272	·10	
Durbhanga	2,633,447	80	70	29	14	3	...	...	8	5	13	22	82	312	·11	
Sarun	2,280,382	728	778	463	226	91	37	24	25	28	17	8	41	2,466	1·08	
Chumparun	1,721,608	206	424	443	224	128	41	31	24	59	68	85	163	1,896	1·10	
Monghyr	1,969,774	247	166	107	46	20	9	5	9	7	13	84	191	904	·45	
Bhagulpore	1,966,158	302	325	156	73	34	6	18	10	19	13	21	40	1,017	·51	
Purneah	1,848,687	3	2	3	3	9	...	1	6	11	3	2	5	48	·02	
Maldah	710,448	4	1	1	...	...	4	...	...	...	...	2	1	13	·01	
Southal Pergunnahs	1,568,093	48	22	25	21	18	9	4	5	10	17	18	31	228	·14	
Cuttack	1,795,065	193	112	52	52	24	4	17	12	24	85	279	263	1,117	·62	
Poori	888,487	12	19	9	8	7	6	14	23	36	37	41	44	250	·28	
Balasore	945,280	23	11	7	6	1	...	3	3	5	11	90	36	226	·23	
Hazaribagh	1,104,742	130	149	169	61	47	25	67	22	23	30	15	12	750	·67	
Lohardugga	1,609,244	16	18	32	17	16	12	8	15	10	10	21	42	217	·13	
Singbhum	561,964	3	5	3	5	...	...	...	...	1	...	...	...	17	·03	
Manbhum	1,058,228	3	3	7	11	...	...	...	..	4	3	3	6	40	·03	
Total ...	66,597,103	3,830 ·05	3,791 ·05	2,607 ·03	1,335 ·02	727 ·01	339 ·005	360 ·005	396 ·005	594 ·008	758 ·01	1,173 ·01	1,766 ·02	17,676 ·26	·26	

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th May* 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

O.

Statement showing the particulars of VACCINATIONS *with* "**Bovine Lymph**" *in some of the Municipalities of Bengal during* 1884-85.

MUNICIPALITIES.	TOTAL NUMBER VACCINATED.	TOTAL NUMBER OF PRIMARY VACCINATIONS.	PRIMARY. Age of successfully vaccinated. Under 1 year.	One and under 6 years.	Six and above.	Total.	Total number of re-vaccinations.	RE-VACCINATION. Age of successfully re-vaccinated. Under 1 year.	One and under 6 years.	Six and above.	Total.	PERCENTAGE OF SUCCESSFUL CASES. Primary.	Re-vaccination.	REMARKS.
Burdwan	24	24	......	2	......	2	...	......	......	......	...	8·33	......	
Tumlook	44	44	......	3	......	3	...	......	......	......	...	6·81	......	
Hooghli and Chinsurah	22	22	......	10	8	18	...	......	......	......	...	81·81	......	
South Suburban ...	613	613	......	......	......	610	...	......	......	......	...	99·51	......	
Baranagore	1,247	1,247	......	......	......	1,215	...	......	......	......	...	97·43	......	
Rajpore	349	349	......	......	......	348	...	......	......	......	...	99·71	......	
South Barrackpore ...	698	698	......	......	......	693	...	......	......	......	...	99·28	......	
Shatkhira	334	334	......	......	......	331	...	......	......	......	...	99·10	......	
Debhatta	303	303	......	......	......	296	...	......	......	......	...	97·68	......	
Serampore*	1,087	1,057	228	614	214	1,056	30	......	5	12	17	99·90	56·66	* One child was vaccinated in Calcutta direct from cow, and with this case vaccination performed by the arm-to-arm process.
Berhampore	538	535	......	......	......	530	3	......	......	......	2	99·07	66·66	
Nowkhila	35	35	8	21	6	35	...	......	......	......	...	100·	......	
English Bazar	24	24	4	9	......	13	...	......	......	......	...	54·16	......	
Dacca	40	40	......	......	......	36	...	......	......	......	...	90·00	......	
Comillah	647	647	72	340	128	540	...	......	......	......	...	84·85	......	
Pubna	745	722	80	457	163	700	23	......	2	7	9	96·95	39·13	
Sowan	26	26	......	......	......	4	...	......	......	......	...	15·38	......	
Durbhanga	82	82	1	74	......	75	...	......	......	......	...	91·46	......	
Madhubani	173	173	15	119	......	134	...	......	......	......	...	77·45	......	
Sasseram	34	34	......	......	......	6	...	......	......	......	...	17·64	......	
Motihari	16	16	......	2	1	3	...	......	......	......	...	18·75	......	
Bhagulpore	507	504	107	292	33	432	93	......	6	39	45	85·71	48·38	
Monghyr	40	40	8	8	......	16	...	......	......	......	...	40·00	......	
Cuttack	39	39	1	29	2	32	...	......	......	......	...	82·05	......	
Dumka	31	31	2	8	3	13	...	......	......	......	...	41·93	......	
Chyibassa	15	15	......	......	......	11	..	......	......	......	...	73·33	......	
TOTAL ...	7,803	7,654	......	......	......	7,161	149	......	......	......	73	93·55	48·99	
VACCINATION BY ARM-TO-ARM PROCESS ...	6,353	6,300	......	......	......	6,058	53	......	......	......	26	96·15	49·05	
VACCINATION FROM TUBE	1,450	1,354	......	......	......	1,103	96	......	......	......	47	81·46	48·95	

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 15*th May* 1885.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Reg. No. 1114J—4'0—29-7-85.

MUNICIPAL DEPARTMENT.

SANITATION.

DARJEELING, THE 31ST OCTOBER 1885.

RESOLUTION.

READ—

The Report of the Sanitary Commissioner for Bengal for the year 1884, including the Report on Vaccination in Bengal for the year 1884-85.

Read again—

The Reports for the previous year, and the Resolution recorded upon them.

The present Report is submitted by Dr. Lidderdale, who was in charge of the office of Sanitary Commissioner throughout the year. It was not received until the end of July, and the delay in its submission is said to have been chiefly due to irregularities in the office of the Sanitary Commissioner, which have since been removed. It is again urged that the 1st May, which is the date fixed for the submission of the report, is "too early a one, with which it is almost impossible to comply, and which does not give a fair time for the proper compilation and digest of statistical and other information given." No doubt the submission of the Vaccination Report with the Sanitary Report has much to do with the delay, since the former, unlike the latter which is for the calendar year, is for the official year which terminates on the 31st March, and there is barely time between that date and the 1st May to check and compile the reports and statistics of each circle of vaccination, and to submit a proper report on the whole in a printed form; but there appears to be no reason why, since returns of the work performed in each circle are now submitted monthly, and the vaccinating season has been curtailed, the annual report cannot be drawn up and submitted much earlier than it has been for the last three years. Its earlier submission would certainly be facilitated by a reduction in its bulk. The length of the report has steadily increased during the last four years. The report for 1881 occupied 73 pages (exclusive of appendices and tables); that for 1884 has extended to 187 pages. In the Resolution on the Report for 1883, the disproportionate attention paid to vaccination by the Sanitary Department was commented upon. But this subject occupies 64 pages in the present report, as against 37 in the report for the previous year. Several other subjects are treated at needless length; and while the Lieutenant-Governor fully recognizes the care and industry bestowed on its preparation, he is satisfied that it would be an advantage to every one if, with the omission of a great mass of details, the necessary information could be compressed into a smaller compass.

2. The year 1884 was characterised by drought in nearly all the districts of the Province, particularly those of the Burdwan and Patna Divisions, where the distress among the people was so great as to necessitate the adoption of special relief measures which were carried on to the end of the year. In Durbhunga a grant of Rs. 5,000 in aid of the road cess funds was sanctioned by Government for expenditure on relief works, and the Board of Revenue were authorized to suspend the collection of rent in those Government estates in the district of Gya in which distress was anticipated by reason of the failure of crops. The rainfall, which was unseasonable and irregularly distributed, was again much below the average, being 57·56 inches against 64·70 inches, the average of previous years, and, as a consequence, the harvest partially failed, giving rise to a considerable advance in the prices of food-grains, particularly common rice, the price of which rose from Rs. 1-10-6

per maund, the average of previous years, to Rs. 2-8-1 per maund in 1884. Notwithstanding the great scarcity and the high prices of food, it is a noticeable feature in the sanitary history of the year that the health of the people throughout the Province does not seem to have suffered. The Sanitary Commissioner records the opinion "that the prejudicial effects of a diminished food-supply with high prices were more than counterbalanced by a comparatively drier season proving beneficial to health."

3. Some advance was made in the registration of vital statistics during the year. The ratio of births per mille of population was 23·51 against 22·08, and that of deaths 20·83 against 18·82. The recorded death-rate, which is still of course very far from being accurate, is considered to be an indication of marked improvement in the registration of mortuary statistics, inasmuch as there was no unusual general epidemic prevalence of sickness to cause an increase in the number of deaths, and, according to local reports, "many deaths were unreported owing to chowkidars having left their villages to seek a livelihood elsewhere, by other labour, in consequence of high prices of food-grains caused by deficient rainfall having injured the crops." The Lieutenant-Governor is disposed to agree with the Sanitary Commissioner in referring almost the whole of the increase to improved registration. It is beyond question that public health was far better in 1884 than in 1882, when cholera raged with unwonted severity, and a deadly wave of fever passed over the greater part of the Province, yet the recorded death-rate in the past year (20·83) exceeds that recorded for 1882 (20·41) by ·42. The districts in which a marked improvement in registration is noticeable are Pubna, Balasore, Sarun, Faridpore and Monghyr. In Sarun, where the number of deaths recorded rose from 34,972 in 1883 to 49,971 in 1884, the *hath-chitti* or hand-book system was introduced, and is said to have worked satisfactorily.

4. During the year under review the provisions of the Compulsory Registration Act IV (B.C.) of 1873 were extended to the Bansberiah Municipality, in the district of Hooghly, and the Naihatti Municipality, in the district of the 24-Pergunnahs. The provisions of the Act, so far only as they relate to the registration of deaths, were also extended to the portion of the Darjeeling district which lies to the west of the river Teesta. The law is now in operation in 116 towns and one rural tract. Its provisions were, however, only enforced in 42 towns during the year. The total number of prosecutions was 396 with 316 convictions, against 297 prosecutions with 232 convictions in 1883. The largest number of prosecutions instituted was reached in Howrah, where 81 persons were tried for offences under the Act, 71 of whom were convicted. The results for the year show an improvement in the administration of the law, and the Lieutenant-Governor is pleased to learn that in some towns "the absence or paucity of prosecutions is due to the people spontaneously and regularly reporting the occurrence of births and deaths among them, and thus giving no occasion for the exercise of the clause of the law, prescribing a penalty for evasions, and that, moreover, in some municipalities special agency has been engaged to detect cases of non-compliance by the people with the requirements of the law." The Lieutenant-Governor recognises the fact that, so long as the work of registration in municipalities is done by the police, Municipal Commissioners are not likely to take any active interest in the subject. He is glad therefore to learn that several municipalities have already taken this work into their own hands, and he trusts that, as this practice becomes more general, the co-operation of the Municipal Commissioners will ensure rapid improvement in the registration of vital statistics in their respective towns.

5. The registration of births was carried on in 47 towns with a total population of 1,685,651 persons during the year, against 46 towns with a total population of 1,685,159 in 1883. The recorded number of births, exclusive of 1,437 children still-born, was 39,640, or a ratio of 23·51 per mille of the total population under registration, against 37,215, or a ratio of 22·08 recorded in the previous year. The record of the number of births is still very defective, and, compared with the number of deaths recorded in the same area, it is

shown to be less by 10,709, or a ratio of 6·35 per mille of population. The following are the towns in which the best results were obtained:—

	1884.	1883.		1884.	1883.
Jamalpore in Monghyr	49·39	49·17	Bankura	33·55	34·93
Kondrapara	46·91	25·54	Revilgunge	32·41	37·30
Brahmenberia	37·45	33·46	Serampore	31·02	26·79
Bettiah	35·17	30·47	Durbhunga	29·57	24·32
Jamalpore in Mymensingh	34·49	34·24	Gya	29·41	29·38
Bhagulpore	33·88	33·64			

In all these towns, with the exception of Bhagulpore, Seramporo, and Gya, the recorded number of births exceeded the number of deaths. The percentage of male to female births was 116 against 114 in the previous year.

6. Of a total population of 66,163,884 persons within the area in which the registration of deaths was carried on, 1,378,610, exclusive of 20,015 still-born children, were reported to have died during the year, showing an increase of 132,934 compared with the number reported to have died in the previous year. The ratio of deaths to population was 20·83 against 18·82 in 1883. The increase in the death-rate was, as noticed above, mainly due to greater interest having been taken in the registration of deaths, especially in the rural circles. The following table exhibits the death-rate from specific causes for the year under review, compared with that for the previous year and the quinquennium 1879—83:—

Name of Disease.	Proportion of deaths per 1,000 of population.								
	In 1884.			In 1883.			In 1879—83.		
	Urban.	Rural.	Province.	Urban.	Rural.	Province.	Urban.	Rural.	Province.
Cholera	3·81	1·96	2·03	3·64	1·27	1·36	3·47	1·52	1·59
Small-pox	1·10	·24	·28	·27	·14	·14	·65	·27	·28
Fevers	12·89	14·66	14·60	13·77	13·81	13·81	15·50	12·26	12·38
Bowel-complaints	3·24	·79	·88	3·54	·73	·83	3·89	·70	·82
Injury	·44	·36	·37	·40	·35	·35	·42	·33	·33
Other causes	5·91	2·54	2·66	5·64	2·18	2·30	5·79	1·73	1·89
Total of all causes ...	27·43	20·58	20·83	27·28	18·49	18·82	29·72	16·82	17·30

There was an increase in the mortality recorded under every head of disease, especially under cholera, fevers, and the maladies classed under "other causes." Most of the increase was contributed by the rural circles. The Sanitary Commissioner observes that, "where registration has been improved, the opinion is growing that the rural circles, characterized by the existence in them of unchecked morbific influences stimulated by primitive filthiness of habits of the people, &c., are unhealthier than the urban circles in which corrective precautions are observed." The experience of the year again showed that the fourth quarter of the year, immediately after the rains, is the most fatal to life. The two worst months were November and December, and October came fourth in the death-scale, the most prevalent diseases being, as usual, fevers and bowel-complaints. The months of April and May were marked by the prevalence of cholera and small-pox, which caused the death-rate for these months to rise considerably above the death-rate for the same months in the previous year. The mortality among infants was higher than usual, the ratio having been 117·90 against 99·22 in 1883. The death-rates per mille of population according to class or nationality were—Christians 13·61, Hindus 20·26, Mahomedans 22·48, Budhists 13·79, and "Other races" 15·21.

7. As in the previous year, the birth-rate in Calcutta was lower and the death-rate higher than in the other Bengal towns. The ratio of births was 19·18 and of deaths 30·59. The increase in the number of deaths occurred under cholera and "Other causes." The mortality in the cantonments in Bengal, among a total population of 33,346, rose from 21·50 per mille in 1883 to 24·35 per mille in 1884. The mortality was again highest in the Hazaribagh Cantonment, where the death-rate rose from 61·16 per mille in 1883 to 129·41 per mille in the year under review. Of 21,182

European seamen who visited the Port of Calcutta during the year, 2,026 were admitted into hospital, of whom 76 died from various causes, chiefly from cholera, the number of deaths from which cause was 36. Besides these, there were 31 deaths which occurred out of hospital. Compared with the statistics of the previous year, the death rate among the European port population was 63·53 per mille against 48·92. Of the native floating population. estimated at 25,409 at the census of 1881, 301 resorted to hospital, of whom 62 died while under treatment. Among this number 38 died from cholera. Outside hospital there were 135 deaths, 100 of which were from cholera. This disease appears to have afflicted the native floating population very severely, "the deaths from it amounting to no less than 70·05 per cent. of the total loss of the year."

8. During the year under review, cholera prevailed to a much greater extent, and with more fatal effect, than in the previous year. The number of deaths recorded was 134,421, or at the rate of 2·03 per mille of the registered population, against 90,439, or a rate of 1·36 per mile of population in 1883. The disease was "present in every district, and pervaded 24,621 villages against 16,316 in 1883, prevailing epidemically in 90 of the registering circles against 47, and with conspicuous severity in 90 against 64; while 432 against 491 circles enjoyed much immunity, and 37 against 46 were entirely free from the pest." Of the total number of deaths, 9,390 were contributed by the urban and 125,031 by the rural circles. The districts in which the disease prevailed with the greatest severity were Balasore (7·79), Nuddea (5·79), Faridpore (5·34), Moorshedabad (4·99), Rajshahye (4·95), Backergunge (4·63), Cuttack (4·16), Dacca (3·85), 24-Pergunnahs (3·57), Pooree (3·52), Jessore (3·38), and Pubna (3·36). In all these districts the death-rate was higher than in the previous year.

9. Thirty-four pages of the report are devoted to the history of cholera during the year; but the observations made in different districts appear to have led to no new discoveries on the subject. As usual, the disease was most fatal in the hot, dry months, and local insanitary conditions fostered its development. With a few exceptions, all the northern districts were comparatively free from it. It is a common idea that the disease is disseminated by pilgrims who carry it with them in their journeyings from district to district. This point was made the subject of special investigation by the Sanitary Commissioner, who, after a careful examination of the cholera statistics of those districts which are traversed by pilgrims, records the following opinion:—

> "I think it unfair to infer that cholera is disseminated by pilgrims *per se*, or that they communicate the disease wherever they go. The fact is that when cholera, engendered by causes not yet definitely determined, and fostered by climatic influences or local insanitary conditions, is prevailing in any locality, pilgrims, if present there, suffer in common with the local residents, often more severely owing to fatigue, old age, debility, bad food or water, crowding, &c.; but they do not import or communicate the disease. They, however, continue to suffer during their onward journey, if the wave of the disease is travelling in the same direction, and the people residing in the localities traversed by this wave also suffer along with them. The disease appears in places far removed from pilgrim routes, and it is during the dry months that it prevails with intense severity, generally in every district in Bengal Proper, whether pilgrims are present in them or not during that period."

A remarkable circumstance in the cholera history of the year is that in a very few instances was the disease found to have manifested itself in the crowds of people who assembled at the public fairs held for days together in the districts. This is attributed to the sanitary precautions adopted. Some noteworthy efforts were made to arrest the progress of cholera in places where it appeared in a virulent form. Special mention is made of the measures adopted by Mr. Collier, the Sub-Divisional Officer, and Dr. Barker, the Civil Surgeon of Serampore, and of the help rendered them by Mr. Finlay of the Hastings Jute Mills, in mitigating the severity and checking the spread of the disease in that town. The remarks made by the Sanitary Commissioner in paragraph 93 of his report, regarding the necessity for an improved water-supply at Pooree, have been communicated to the Public Works Department, and the question will be considered by the Lieutenant-Governor when at Pooree during his approaching visit to Orissa.

10. In examining the cholera mortality in the 24-Pergunnahs during the year 1884, the Sanitary Commissioner remarks—

"The Suburbs of Calcutta again heads the list with an increase in mortality of nearly one per 1,000 of population, as compared with the death-rate of 1883. The mohullahs in it which formed the scene of greatest suffering were Balliaghatta, Entally, Bhowanipore and Watgunge. This Municipality was specially inspected by me and found in an extremely insanitary condition. A report embodying the defects and indicating remedies was sent to the Commissioners, and a copy thereof submitted to Government. An abstract of this report, with a note of the action taken by the Commissioners on the suggestions therein made, will be found in Appendix III to this report. Some of the officers of the Vaccination Department visited the Suburbs of Calcutta and several of the other localities where exceptional mortality from cholera occurred. Assistant Surgeon Priumber Mitter, Deputy Superintendent of Vaccination, Metropolitan Circles, records the following observations in connection with some localities in the Suburbs and in the North and South Suburban Towns. *Manicktollah* is the most filthy part of the Suburbs, the land behind houses being used as public latrines. In fact, all the bustees in this area are in an extremely insanitary condition from *fæces* and house refuse, lying on the roadsides, lanes and bye-lanes, and the ponds, hollows, and low lands being the receptacles of liquid sewage and filth. *Garden Reach.*—All the bustees here are in a similar insanitary condition with regard to conservancy, drainage, roads, &c. *Sett Bagan and Ghose Bazar.*—In these and the neighbouring bustees foul water holes, containing decaying vegetation, abounded; there are many filthy private privies; the water in two large tanks was filthy, green in colour and turbid, and two of the smaller ones were covered with decomposing plants, their sides lined with rank vegetation, the water in them 'appearing like vegetable decoction emitting disagreeable odour.' *Ballygunge.*—Here the waste lands were found to be covered with litter and other refuse, and were resorted to for defæcation. *Gangarambusti and Wolfutbazar*—These were found in their usual state of uncleanliness without any arrangement for the removal of sewage and refuse. *Matiabrooj, Mooriali and Kanchisharak* were so crowded as to prevent free perflation of air, and their courtyards and compounds were extremely filthy. In *Ekbalpore* some of the drains were filthy and obstructed, and the cowsheds full of decomposing litter and refuse. *Baniapooker.*—Here the drains were filthy and emitted a sickening odour, and the ditches and low lands covered with *fæces*, rank vegetation and refuse of every description. The water-supply in all its bustees was bad, drinking-water being taken without any regard as to its quality; many of the houses were deficient in ventilation, the ground about them damp, and no arrangements existed with regard to house scavenging. *Bhowanipore.*—This place was in an indescribably insanitary condition, and its bustees do not admit of free scavenging. The tanks are foul and the drains, with few exceptions, are defective in level. *Watgunge.*—Some of the ditches here contained weeds, house sweepings, and human excreta, and the receptacles in one of the latrines were overflowing with *fæces* emitting an abominable odour. *Kalighat in Tollygunge.*—Although some improvements had been effected, the sanitary condition of this locality is yet very defective with regard to scavenging, cleanliness, ventilation and crowding of huts. The latrines were most filthy, the vessels in them overflowing with decomposed bubbling *fæces* seats unclean, and the latrine too near a much-used tank belonging to the police. The remarks of Dr. Ghose, the Officiating Deputy Sanitary Commissioner of the Metropolitan Circles, who also visited most of the above-named localities, are equally condemnatory. His reports also expose many extremely insanitary conditions obtaining at Cossipore, Baranagore, Barripore and Joynuggur thanas, and Baraset Municipality. I would be extending my Report to an undesirable length were I to reproduce all the defects disclosed in the reports of the Officers of the Vaccination Department. It will suffice to say that the above description applies *mutatis mutandis* to several other localities in the Suburbs, one of the largest and most important of the Municipalities in Bengal, and to other towns and thanas in the Province. It may be noted here that some judicious recommendations made by Dr. Ghose, after careful inquiry and inspection of several bustees in the Suburbs, do not appear from his later reports to have been followed by any action on the part of the municipal authorities."

It seems to the Lieutenant-Governor that it would be impossible for Government to approach the subject of a removal of these horrible conditions in different parts of the Suburban Municipality till the question of amalgamation is settled. At the same time he is convinced that, if the Suburban Municipality is unable or unwilling to cope with the state of things revealed by the Sanitary Commissioner's report, it is only by the amalgamation that any effective reform can be secured.

These remarks, together with a copy of paragraph 299 of the Report, will be communicated to the Committee appointed to consider the question of the amalgamation of a portion of the Suburbs with the town of Calcutta.

11. Small-pox prevailed in a more virulent form during the year 1884 than in the previous year. "The reported number of casualties amounted to 18,533 against 9,714 and the proportionate death-rate to population to ·28 per mille against ·14 per mille. The disease prevailed with more or less severity in 53 circles against 30, and was absent from 224 against 284; and it invaded

2·96 per cent. of the villages against 1·73 per cent." Of the total number of deaths, 2,711 were contributed by the urban and 15,822 by the rural circles. The areas in which the disease was most severely felt belonged to the districts of Gya (10), Sarun (8), Patna (7), Chumparun (5), and Hazaribagh (7). The districts of Gya and Sarun have not yet been brought under the operation of the Vaccination Act, and this no doubt accounts for the high death-rates returned by them. The same may be said of Chumparun, which has been only partially protected; and although Patna was reported to have been almost thoroughly protected, the number of deaths from small-pox in that district seems to contradict this statement. As in the previous year, the mortality was highest among children; no less than 72·27 per cent. of the total number of deaths were those of children under 12 years of age. The record of the seasonal incidence of the disease confirmed the experience of former years that small-pox is most prevalent during the hot months of March to June.

12. The total number of deaths from fever recorded during the year was 966,233, or a ratio of 14·60 per mille of the registered population, against 913,766, or a ratio of 13·81 in 1883. The registered mortality from this cause has steadily increased year after year since 1871, when the recorded number of deaths stood at 169,505, or a ratio of 2·56 per mille of population. With regard to this return, the Sanitary Commissioner states that the numerical increase is due to the facts revealed by improved registration, and that no circumstances have occurred to "justify the belief that the Province *generally* is getting more feverish than before." Of the total number of deaths, 584,893 were registered in Bengal Proper, 301,302 in Behar, 26,523 in Orissa, and 53,485 in Chota Nagpore. The death-rate per mille of population in each of these areas was 16·67, 13·02, 7·30, and 12·34 respectively. The districts which suffered most from fever were Rajshahye (30·40), Nuddea (29·22), Pubna (27·45), Jessore (22·41), Bogra (20·96), Gya (20·81), Moorshedabad (20·25), Beerbhoom (19·53), Burdwan (18·81), Khulna (18·52), Julpigoree (18·25), and Rungpore (17·09). The experience of the year again showed "that the severity of the disease begins and progresses in intensity after the rains have well set in, and is most virulent in January, October, November, and December, especially in the two latter months, when the evaporation of moisture from the sodden soil is rapid and the daily range of temperature considerable." As in the case of cholera, "the relationship of fever with the quantity of rainfall has always been a constant phenomenon." The local reports continue to show that fever is found to be most prevalent in those districts in which the soil is saturated with moisture, and the land is loaded with decaying organic matter owing to obstructed drainage due either to artificial deposits, or to the silting up of the beds of rivers and khals. It is no doubt true, as reported from many districts in Central and Eastern Bengal, that the process of silting is steadily going on throughout a very wide area, and extending its influence on health from year to year. The effect of drainage on fever is strikingly exemplified in the case of certain villages visited by Dr. Ghose, Officiating Deputy Sanitary Comissioner, in the Midnapore district. On the inner side of the embankment, along the right bank of the Roopnarayan river, is a group of well-drained villages, in which "no vestige of malarious cachexia, is to be seen in the people;" while on the outer side of the embankment, "the people of churs Najooreh and Bilkota living on *churs* generally inundated during the rains have well-marked signs of malarious disease in them." The Lieutenant-Governor notices the frequency with which the steeping of jute fibre in tanks and water-courses is spoken of in the present report as a harmful source of pollution of water, and consequently a probable cause of much disease. The matter is one to which local attention should also be specially directed, and the point should be specially noticed in the next report. The water-supply stations on the Eastern Bengal Railway were specially reported on in August 1884, in consequence of which measures have been taken by the Manager to improve the supply at some of the most important stations, and other improvements are in contemplation. The remarks of the Sanitary Commissioner regarding the silting up of the Kana and Sarasati nuddees in the Hooghly district will be considered in the Public Works Department.

13. The mortality during the year from "bowel-complaints," "injury," and "other diseases" was 58,376, 24,674, and 176,373 respectively. Com-

pared with the statistics of the previous year, there was an increase under each of these heads, though not to a very noticeable extent. Under "injury" the largest number of deaths are again shown to have been occasioned by snake-bites and attacks of wild beasts. The recorded mortality from this cause was 10,393 against 9,776 in 1883. Accidents stood high in the list of casualties, the number having been 10,078 against 8,727 in 1883. Among "other diseases," heat apoplexy and scurvy caused more suffering among the European seamen who visited the port during 1884 than in the previous year.

14. The work of the Vaccination Department continued to progress during the year 1884-85. The total number of operations performed was 1,488,296 against 1,364,642, the number performed during the previous year, showing an increase of 123,654. Towards this increase the vaccination circles contributed 114,483 and the municipal area 9,171 operations, as exhibited in the following table:—

Circles.	Total number of vaccinations performed.		Difference in 1884-85.	
	In 1884-85.	In 1883-84.	Increase.	Decrease.
Calcutta ...	15,955	9,538	6,417	.....
Metropolitan Circles ...	366,139	342,543	23,596	......
Bovine Vaccination Department, Calcutta ...	4,760	3,310	1,450	......
Suburbs of Calcutta, including cooly depôt ...	15,021	14,397	624	......
Total of Metropolitan Circles ...	385,920	360,250	25,670	.....
Darjeeling Circle ...	229,560	221,536	8,024	......
Ranchi " ...	148,972	146,283	2,689	......
Sonthal Pergunnahs " ...	123,048	106,985	16,063	......
Eastern Bengal " ...	397,079	351,016	46,063	......
Orissa " ...	46,971	52,542	.....	5,571
Behar " ...	54,755	39,627	15,128	......
Total of Vaccination Circles ...	1,402,260	1,287,777	114,483	5,571
Municipalities, Dispensaries, &c. ...	86,036	76,865	9,171	......
Grand Total ...	1,488,296	1,304,642	123,654	5,571

Of the total number of operations in the year, 421,274 were performed by the Government agency, 976,226 by licensed agency, 4,760 by the Bovine Vaccination Department, and 86,036 by municipal vaccinators, dispensary medical officers, &c. Comparatively speaking, the largest amount of work was done by the Government vaccinators, each of whom performed on an average 1,280 operations. The licensed vaccinators performed on an average 915 operations each. It is believed that better results would have been obtained from the licensed system of vaccination, were it not for the difficulty which is experienced by the licensed vaccinators in realizing the fees for operations performed by them. It appears to the Lieutenant-Governor that this difficulty would not be felt, in places where the Compulsory Vaccination Act is in force, if in each case the fee were demanded before the operation was performed. The law, if rigidly enforced, would compel the people to seek vaccination, and the licensed vaccinators, to whom the people would have to go, would be able to refuse to perform the operation without prepayment. Protection was afforded for the first time by Government vaccinators to four thannas in the Tipperah district, two thanas in the Noakhally district, six thanas in the Cuttack district, and four thanas in the district of Shahabad. On the other hand, nine thanas in the district of Mymensingh, and the whole of the Patna district, were for the first time placed under the licensed system of vaccination, after having been traversed by the Government vaccinators. In addition to the areas protected in former years, the whole of the districts of Tipperah and Pubna, and parts of the districts of Manbhoom, Lohardugga, and Cuttack, were reported to have been thoroughly protected at the close of the season 1884-85. The Sanitary Commissioner, however, shows that the words "thorough protection" must not be construed too literally. Even in the Metropolitan Circles, in which the districts have been reported year after year to be "thoroughly protected," many whole villages have been found by Dr. Ghose, the Officiating Superintendent, which have up to this time successfully resisted vaccination. In the Midnapore district alone there are no less than 356 villages in which the whole or a large portion of the inhabitants are

still unprotected. Until the strong prejudices against vaccination, which still prevail in the minds of a considerable section of the population in all parts of the Province, are overcome, thorough protection, in the literal sense of the words, will be impracticable.

15. The following table exhibits the number of primary and secondary operations performed during the year 1884-85 in the different circles (including municipalities), and the percentage of successful cases under each:—

Circles.	Total number of vaccinations.	Primary Vaccinations.			Re-vaccinations.		
		Total.	Number successfully vaccinated.	Percentage of successful operations.	Total.	Number successfully vaccinated.	Percentage of successful operations.
Metropolitan	418,238	409,833	406,860	99·57	8,405	4,069	54·89
Darjeeling	234,453	234,180	231,750	99·68	273	207	76·95
Ranchi ...	150,966	150,879	146,357	99·03	87	53	63·85
Southal Pergunnahs ...	132,310	131,749	130,591	99·89	561	374	68·00
Eastern Bengal... ...	409,706	409,364	407,307	99·91	342	254	76·73
Orissa	51,367	51,240	49,306	96·91	127	65	55·55
Behar	75,301	74,837	71,773	97·31	464	184	34·47

The reason assigned for the comparatively small number of operations performed in the Orissa Circle is that the districts of Balasore and Pooree were excluded from the sphere of operations for the year, and that in some of the selected areas of the Cuttack district, vaccine operations had to be stopped in the middle of the season owing to an outbreak of cholera. In the Sonthal Pergunnahs Circle, where the work performed was unfavourably reported on in 1883-84, the number of operations rose considerable. The increase is said to have been caused by work having been carried on largely during the recess, to suppress outbreaks of small-pox in the Sonthal Pergunnahs, Bhagulpore, and Monghyr districts. It was also due in part to the exertions of the new Superintendent. The Lieutenant-Governor learns with regret that much of the work of the Government vaccinators in the district of Shahabad was retarded in consequence of an order issued by the Magistrate, permitting certain inoculators to vaccinate, and forbidding police interference with them. It appears that some of these men not only induced people to refuse vaccination by the Government vaccinators, but, under cover of the licenses granted to them, practised inoculation even in thanas where the prohibitory law is in force. The Lieutenant-Governor will await the result of the Sanitary Commissioner's enquiry into this matter. Compared with the figures of the previous year, there was an increase in the number of children brought under protection in the year 1884-85; but fewer adults were vaccinated than in the previous year.

16. During the year under review, the provisions of the Compulsory Vaccination Act were extended to the towns of Kotechandpore in Jessore, Deoghur, Sahebgunge, Dumka, and Rajmehal in the Sonthal Pergunnahs, Brahmanbaria and Commilla in Tipperah, Darjeeling, Cuttack, Bali in Howrah, Sherpore in Bogra, Patna, Durbhunga, Hazareebagh, Purneah, and Pooree, and to five thanas in Tipperah. The law is now in force in 81 towns, 4 cantonments, and 9 rural areas, and preliminary steps have been taken to extend it to the Chittagong and Sudharam municipalities. With a few exceptions, such as Gya, Monghyr, and Bhagulpore, the law met with comparatively less resistance in the places in which it was enforced during the year 1884-85 than in previous years. It is evident that the measure is being gradually more appreciated by the Mahomedans, and that the Rajpoots and Marwaris, who have always stoutly resisted it, are in many places less persistent in their opposition. In Burdwan, owing to the presence of small-pox, operations had to be carried on throughout the year, and it is stated that the Marwaris, who were at the outset strongly hostile to the measure, at last acquiesced and allowed their children to be vaccinated. Experience of the beneficial effects of vaccination is slowly, but surely, popularizing it wherever it is introduced: it is a work of time, and inoculation is still a powerful rival; but every year shows that the superiority of vaccination is more generally acknowledged.

17. A very large number of the operations during the year were performed with bovine lymph, which is still spoken of as "equal in operative power to humanized lymph." Its only drawback is that when stored in tubes it soon deteriorates, on account of the serum of blood which passes into the tube with the virus when squeezed from the vesicle on the calf, and when conveyed to long distances its efficacy is lost in consequence of this deterioration during transit. When used direct from the calf its efficacy is indisputable. On the whole, the work performed with this lymph was successful, and the Lieutenant-Governor is glad to learn that the prejudice against it entertained by the Hindus is dying out. The one great advantage which bovine lymph has over humanized lymph is that it is easily obtained, and that the supply is always equal to the demand.

18. The total amount expended on vaccination during the year 1884-85 was Rs. 1,51,448-14-4, exceeding the expenditure, in the previous year by Rs. 15,853-15-6. Of the total expenditure, Rs. 73,663-9 represent the cost of the operations performed by the Government vaccinators, Rs. 67,082-15-8 the cost of the establishment provided by Government for supervising the operations of the licensed vaccinators, and Rs. 10,702-5-3 the cost of vaccination to municipalities. In addition to the regular expenditure, Rs. 1,201-11, which were received as private contributions from various sources, were expended in aid of the work. The average cost of each successful operation performed by the Government vaccinators was 2 annas and 10 pies; that by the licensed vaccinators 1 anna and 1 pie; and that by the municipal agency 2 annas and 2 pies. On the whole, the average cost of each operation performed during the year was 1 anna and 8 pies, the same as it was in the previous year.

19. The percentages of municipal income expended on sanitary works and roads during the year 1884-85 were 38 and 19 against 34 and 18 respectively in the previous year. The districts in which the largest proportion of municipal income was devoted to improvements in sanitation were Julpigoree, Dacca, Hazaribagh, Burdwan, Pooree and Midnapore. The towns in the districts of Mymensing, Khulna, Bogra, and Noakholly were most deficient in this respect. The special purposes for which the municipal allotments for sanitation were expended during the year 1884, compared with the figures for the year 1883, are shown in the following statement:—

Nature of work.	Total cost.		Difference in 1884.	
	In 1884.	In 1883.	Increase.	Decrease.
	Rs.	Rs.	Rs.	Rs.
Conservancy, including latrines ...	3,99,293	3,07,951	91,342	
Ditto, establishment ...	2,82,206	3,25,860	..	43,654
Drainage ...	1,05,973	96,097	9,876	..
Water-supply ...	1,35,181	1,60,449	...	25,268
Disposal of the dead ...	8,341	7,629	712	.
Markets and slaughter-houses ...	24,042	16,533	7,509	...
Vaccination ...	12,481	10,992	1,489	.
Treatment of the sick ...	1,87,185	1,69,339	17,846	
Other sanitary works ...	78,087	53,080	25,007	. .
Total ...	12,32,789	11,47,930	84,859	68,922
Construction, maintenance, and repairs of roads ...	6,28,578	6,06,160	22,418	..
Total including roads ...	18,61,367	17,54,090	1,07,277	68,922

There was an increase of expenditure under all heads except establishment and water-supply.

20. Among the important sanitary works carried out during the year 1884, the Burdwan water-supply takes a leading place. The water-works were formally opened by the Lieutenant-Governor on the 4th November, and the regular supply of water commenced from the 1st December 1884. The beneficial effect of the improved water-supply on the inhabitants of the northern portion of the town where the pipes are laid, 99 per cent. of whom are said to use the water, is unquestionable. The Lieutenant-Governor trusts that it will not be long before the supply is extended to the southern portion of the town, the inhabitants of which still resort to the Banka Nulla and the Eden Canal. Very slow progress appears to have been made with regard to the proposed

water-supply scheme for all the riparian municipalities on the right bank of the Hooghly from Howrah to Serampore. The services of a Government Engineer have been lent for the purpose of preparing the necessary estimates, and it is hoped that some definite project will be adopted before the close of the current year. A scheme of water-supply for the town of Bhagulpore has been sanctioned by Government, and the work is being carried on as rapidly as possible. Some attention was devoted to the improvement of drainage during the year, but very much still remains to be done in this direction, and the Lieutenant-Governor trusts that the suggestions made from time to time by the Sanitary Department on the subject will not be disregarded by the local bodies to whom they have been communicated. During the year 1884, much attention was paid by the Government to the insanitary condition of Calcutta and its Suburbs, and steps were taken with the view of remedying the evils which have been shown to exist.

21. The Lieutenant-Governor observes with satisfaction the improvement in the amount of sanitary work performed by the officers of the Vaccination Department. The record of the observations made by these officers is interesting, and cannot fail to help on the cause of sanitation. The work of the Department affects the well-being of some 68 millions of people; and if the progress is slow, the result is due to the apathy and, sometimes, hostility of the people to any measure of reform, and to the cost involved in any practical schemes of improvement. There is also the fact that outside of municipalities there is no law by which the officers of the Department can enforce their remedies. Even, however, if the advice given to the inhabitants of the villages inspected is not immediately followed by action, it is in itself an advantage to the Province to have so many qualified medical officers thoroughly acquainted with the sanitary condition of the areas under their charge; and with the introduction of the Local Self-Government Act, when funds are made available for local improvements, the question of village sanitation should, at any rate in the more advanced districts, be taken up in real earnest. The detailed remarks of the Sanitary Commissioner upon his subordinates will be communicated to the Appointment Department for information. Finally, the thanks of the Lieutenant-Governor are due to Dr. Lidderdale for his report, which, though too lengthy and diffuse, is full of interesting and valuable information.

By order of the Lieutenant-Governor of Bengal,

J. WARE EDGAR,

Offg. Secretary to the Government of Bengal.

No. 2518T—M.

COPY of the above Resolution forwarded to the Sanitary Commissioner, Bengal, for information and guidance.

No. 2519T—M.

COPY of the above Resolution, and of the Report, forwarded to the Inspector-General of Civil Hospitals for information.

No. 2520T—M.

COPY of the above Resolution, and of the Report, submitted to the Government of India, in the Home Department, for information.

No. 2521T—M.

EXTRACT paragraphs 9 and 12 of the above Resolution, and paragraphs 93 and 110 of the Report, forwarded to the Public Works Department, Bengal, for disposal.

No. 2522T—M.

EXTRACT paragraph 10 of the above Resolution, and paragraph 299 of the Report, forwarded to the Hon'ble H. J. Reynolds, C.S.I., for information.

No. 2523T—M.

EXTRACT paragraph 21 of the above Resolution, and paragraphs 229 to 237 of the Report, forwarded to the Appointment Department for information.

Circular No. 19T—M.

COPY of the above Resolution, and of the Report, forwarded to all Commissioners of Divisions for information.

By order of the Lieutenant-Governor of Bengal,

G. K. LYON,

Offg. Under-Secretary to the Govt. of Bengal.

DARJEELING,
The 31st October 1885.

C. E. G. & others—Reg. No. 10040C—740—11-11-85.

EIGHTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL

FOR THE YEAR 1885.

INCLUDING THE ANNUAL REPORT ON VACCINATION IN BENGAL
FOR THE YEAR 1885-86.

BY

DEPUTY SURGEON-GENERAL R. LIDDERDALE, M.D.,

Sanitary Commissioner for Bengal.

Calcutta:

BENGAL SECRETARIAT PRESS.

1886.

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EIGHTEENTH ANNUAL REPORT

OF THE

SANITARY COMMISSIONER FOR BENGAL.

YEAR 1885.

SECTIONS I. II, III, & IV.

THE information required under these Sections is omitted from this Report as, under standing orders on the subject, it will be submitted in the Imperial Sanitary Commissioner's Report.

SECTION V.

VITAL STATISTICS.

Statistics dealt with in this Section.

2. IN this Section are considered the birth statistics of 46 principal Municipalities, and the mortuary statistics of the Province for the calendar year 1885.

REGISTRATION—Value of—in 1885.

Birth registration.

3. The aggregate number of Births registered in the 46 Municipalities amounted during the year under review to 41,133 against 39,640 in the preceding year, showing an increase of 1,493 Births. Considering the returns received from these Municipalities individually, I find that the 11 named in the margin recorded approximately correct results with reference to their populations, against 9 in 1884; that the 14, also cited in the margin, against 19, submitted defective returns; and that the remaining Municipalities—21 in number—presented birth-rates ranging from 19·48 to 29·54 per 1,000 of population.

Approximately correct results.

	Ratio per *mille*.
Jamalpore in Monghyr	53·23
Bhagulpore ...	40·41
Bettiah ...	38·28
Brahmanberiah ...	37·84
Kevilgunj ...	37·30
Shaikpura ...	36·03
Kendrapara ...	34·97
Sitamurhi ...	34·44
Gya ...	34·11
Patna ...	32·93
Durbhanga ...	32·42

Very defective results.

	Ratio per *mille*.
Cuttack ...	18·28
Midnapore ...	18·20
Kishnaghur ...	18·05
Dacca ...	17·00
Arrah ...	16·74
Ranchi ...	16·48
Bussirhat ...	15·69
Puri ...	15·00
Jessore ...	14·47
Jajpur ...	13·62
Santipore ...	11·08
Darjiling ...	9·02
Faridpore ...	8·18
Ranaghat ...	7·94

Ratio per 1,000 of population.

1884.	1885.
23·51	24·71

4. On the whole, although the year under review presents results in advance of those of the preceding year, the birth record of the towns under notice is very defective; and this is to be much regretted, because the urban areas command many facilities for ensuring correct registration.

Death registration.

5. It was stated in the Report of 1884 that the results of death registration exhibited an improvement on those of all past years. The returns of the year under review

exhibit a further advance, for during it 1,504,745 deaths were recorded against 1,378,610 in 1884, showing that an excess of 126,135 deaths had been registered. Of the 45 districts in the Province, 15, against 10 in 1884, recorded approximately correct, and 12 against 22 defective results. These districts and the results returned by them are marginally noted. The returns of the remaining districts—18 in number against 13—show that deaths were registered in them at rates ranging between 20·05 to 24·72 per 1,000 of population. Of the 647 registering circles in Bengal, 8 against 4 recorded deaths at the rate of 50 and above per 1,000 of population; 22 against 25 at 40 to 50; 89 against 71 at 30 to 40; 324 against 271 at 20 to 30; and the remaining cirlces (204 against 278) at under 20.

Approximately correct results.	Ratio per *mille.*	*Defective results.*	Ratio per *mille.*
Nuddea ...	34·75	Mozufferpore ...	19·59
Monghyr ...	32·26	Chittagong ...	18·91
Rajshahye ...	31·18	Sonthal Pergunnahs	18·41
Bhagulpore ..	31·04	Bankura ...	18·18
Pubna ...	29·15	Durbhanga ...	18·01
Birbhum ...	28·30	Darjiling ...	17·99
Bogra ...	27·72	Tipperah ...	17·81
Julpaiguri ...	25·99	Lohardugga ...	15·96
Patna ...	25·83	Faridpore ...	15·61
Jessore ...	25·75	Mymensing ...	14·41
Gya ...	25·67	Singbhum ...	14·33
Shahabad ...	25·62	Manbhum ...	14·11
Rungpore ...	25·57		
Burdwan ...	25·52		
Maldah ...	25·28		

6 Distributing the number of deaths registered this year into the various heads of disease by which they were caused, it will be seen—*vide* figures in the margin—that, in comparison with the mortality during the preceding year, and with the average mortality of the quinquennium 1880-84, there was, small-pox excepted, an increase of deaths under every head. The year under review was decidedly an unhealthy one generally, particularly for cholera and fever; but considering that notwithstanding the casualties from cholera in 1876 (196,590) and in 1882 (182,352), and from small-pox in 1879 1880, and 1881 (22,843, 22,953, and 24,371)—diseases the incidence of which fluctuates very much—were considerably greater, still the total mortality in those years was far below that of the year under review, I maintain that the increase in the number of deaths in 1885 is not solely referable to the more fatal prevalence of diseases, but that a good portion of it, specially under the head of fever, has resulted from improvement in registration; and this inference is widely supported by local opinion.

	Number of deaths—			Increase or decrease as compared with 1884.	Increase or decrease as compared with the mean of 1880-84.
	In 1885.	In 1884.	In 1880-84.		
Cholera ...	173,767	134,421	105,207	39,346 *I*	68,560 *I*
Small-pox ...	9,863	18,533	17,844	8,670 *D*	7,981 *D*
Fevers ...	1,042,142	966,233	888,092	75,909 *I*	154,050 *I*
Bowel-complaints	63,808	58,376	55,401	5,432 *I*	8,407 *I*
Injury ...	28,956	24,674	22,790	4,282 *I*	6,166 *I*
Other causes ...	186,209	176,373	141,076	9,836 *I*	45,133 *I*
All causes ...	1,504,745	1,378,610	1,230,410	126,135 *I*	274,335 *I*

Unreported Deaths.

7. It should be mentioned that many casualties referable to the cyclone and storm-wave in Orissa have had no place in this year's death-rolls owing to there being no persons to record them, the chowkidars having perished with the inhabitants, and that during the high inundations in many parts of Bengal they must have been unable to keep up their regular attendance at the registering stations. It is estimated that in Orissa alone about 15,000 persons met their deaths in this manner. The officers of the Vaccination Department have also reported large omissions in the record of deaths, prominent among them being the Superintendent of Vaccination, Sonthal Pergunnahs Circle, who found that in thanas Jumui and Sikandra in Monghyr, in Umerpore in Bhagulpore, and in Jamtara and Rajmehal in the Sonthal Pergunnahs, 353 deaths which occurred in the villages, had not been reported at the thanas. In Rungpore a large number of deaths were unrecorded, although since last year registration has advanced from 18·86 to 25·57 per 1,000. In the Singhi-Li-La range in Darjiling—a large tract—there is no registering agency.

Special measures adopted locally to improve Registration.

8. Under this head I propose to submit only such measures adopted during the year to promote registration as are worthy of record. Generally, the reports disclose that the verification of the thana death registers by the magisterial and superior police authorities was more extended and constant than usual; that the *hath-chitti* system was more energetically

enforced in several of the districts in which it is in operation; that a larger number of chowkidars was punished for omitting to report deaths; and that, in fact, the instances were not rare in which a lively interest was manifested in the cause of registration.

The *hath-chitti* system has been more generally adopted, and several Municipalities have taken, and some others propose to take, over the work of registration from the hands of the police. In some towns special agencies have been entertained to detect and report people for evasions of the Compulsory Registration Law. These are moves in the right direction, and have no doubt contributed to some extent in improving the returns of the year.

Monghyr.—Of all the methods adopted for the improvement of registration, the one introduced into this district possesses the greatest value, and is worthy of imitation generally. Under it the registration in Monghyr, which has been lamentably defective for years, has this year improved very materially—in fact the number of deaths recorded was more than double that of 1884, viz., 63,555 as opposed to 31,573, and the proportionate death-rate to population, 32·26 per 1,000, closely approximates the truth—while there was no reason to attribute the increase to any cause other than that of greater accuracy in registration, as no abnormal outbreak of disease is believed to have occurred. The credit of this is due to Major H. M. Ramsay, the District Superintendent of Police, who has for some years paid great attention to registration, the looking after which is a part of the duty of all Police Officers. I do not wish to convey the idea that Major Ramsay has devoted attention directly to death registration. The improvement brought about has merely followed his manner of controlling chowkidars, which enables him to obtain information specially required in his department of a more reliable kind than formerly. Improved mortuary statistics only followed a better mode of administration.

The plan followed by Major Ramsay in controlling and supervising registration is very simple. The pivot on which all the arrangements turn is systematic, punctual and regular attendance of the chowkidars with their reports at the thanas to which they are attached. The thana is divided into circles, and the circles into beats, and each circle and beat is given a number. The chowkidars are divided two into equal batches, one of which has to attend with the reports at a fixed hour every Monday, and the other every Tuesday. At the thana the chowkidars are mustered and sit in rows, each row representing a circle. Every man knows the numbers of his circle and beat, and when they are called out the right man stands up and delivers his report to the registrar. It is said that it takes about a minute to register each death. An absentee chowkidar is bound to send an efficient substitute.

Major Ramsay hopes that after he has picked out the careless chowkidars and made examples of them for the benefit of the others, he will be able to secure the registration of 95 per cent. of the actual deaths which occur in the district. He claims "to have satisfactorily undone, not cut, the Gordian knot represented by the duty imposed on the police officers of registering deaths," and he has had hard work in effecting this. He has, he says, been repeatedly complimented for years past on the results he obtains in every branch of administrative work, and these results have all more or less been brought about, he affirms, by his way of working the only machinery at the disposal of a Police Officer; and he solicits that, if his system is found after strict examination to be a good and sound one, it may be brought to the special notice of Government.

Mr. Marindin, the Joint-Magistrate of Monghyr, says from personal observation of the musters of the chowkidars held at the Jamui and Chakai thanas, that he was struck at both places with the full attendance, the discipline which was maintained, and the readiness and intelligence with which the chowkidars gave information; and that there was nothing unusual in what he witnessed, the men appearing as if only going through an ordinary parade to which they had been accustomed. He fully agrees with Major Ramsay in thinking that regularity and discipline at musters is the root of the matter, and that when this is secured the main difficulty against obtaining statistics, whether police or mortuary, is overcome, and

information will flow in a simple and regular stream. He believes that if Major Ramsay's scheme is properly worked it will secure satisfactory results; and, having given some attention to the matter, he thinks that it would be a wise step on the part of Government to call on Major Ramsay to embody his system in a few clear and concise rules for adoption generally throughout Bengal.

The present Magistrate, Mr. Jeffery, in forwarding Major Ramsay's report, observes that the improvement in registration in Monghyr has been attained simply by the attention he (Major Ramsay) has paid to enforcing the punctual attendance of chowkidars at the weekly thana musters, and to the methodical manner in which they are questioned and the answers recorded by the local police officers under the system. There has been no strained efforts to run up death registration, and information on other heads is equally called for and obtained from the chowkidars, but punctual attendance is insisted upon, discipline and order maintained at the musters, and method and intelligence have become the rule in inviting and recording information, with the natural result that improvement in the particular class of statistics has followed.

In the interests of registration I think this scheme a very important one, and worthy of general adoption. Indeed it would be well if Major Ramsay were deputed to Mymensing and other badly-registered districts to put the mortuary statistics on a fair footing.

Midnapore.—Much attention was bestowed on the subject in this district. In addition to the *hath-chitti* system which is in operation, the Police Officers, from Inspectors to Head-constables, were made to check registration by very frequently making independent enquiries of deaths in the villages, and comparing the result with the entries in the thana registers. This led to the detection of many omissions, and a considerable number of the defaulting chowkidars was prosecuted and punished. Some improvement in registration was effected; but the record, showing a death-rate of 20·40 per 1,000 of population, is still defective. It is, however, suspected that when for a short time communication between the thanas and villages was cut off by the inundation caused by the heavy rains, the work of registration was interfered with. In the Midnapore Municipality a special Registrar was appointed, and his returns were verified by the Ward Committees.

Rungpore.—In this district great pains was bestowed on registration by the District Superintendent of Police; and by the vigorous measures adopted, chiefly by punishing the chowkidars for neglect, the number of deaths recorded rose from 3,692 in August to 8,794 in December, and a large number of deaths was discovered by special enquiry to have been unregistered. Even after the completion of the annual statements, 2,250 were found to have been unreported. The result of these measures is that the mortuary rolls show the considerable increase of deaths registered of 6·71 per 1,000 of population, the total deaths recorded being 25·57 per 1,000. Although this ratio is higher than was ever before attained, it is still below that expected in so unhealthy a district as Rungpore.

Bogra.—Here quarterly statements, indicating the defects in registration in the registering circles, were sent by the Civil surgeon to the District Superintendent of Police, who adopted the required corrective steps.

Darjiling.—The Deputy Commissioner reports that since the introduction of the Compulsory Registration Act considerable improvement in registration has been effected in tea-gardens, the deaths being more punctually reported. Some omissions were detected, but the recusants were not prosecuted, as they amply apologised and promised reform. The result of the measure was that the death-rolls showed an increase in the ratio of deaths registered of 5·19 per 1,000 of population; but owing to poor returns from those parts of the district in which the Compulsory Law is not in operation, comprising four-fifths of the district, the general result could not advance further than 17·99 per 1,000—a ratio which is very defective, considering that a large portion of Darjiling is Terai country were malaria is rife.

Patna.—A very good plan of testing registration was adopted in this district. The deaths reported from each group of villages forming a chowkidari

circle were separately recorded in the registers, and this record was from time to time checked by the superior Police Officers when on tour, special enquiries being made in those circles from which abnormally few deaths were reported.

Mozufferpore.—At Sitamurhi town a special peon has been employed to collect and report births and deaths to the Bukshi who has been appointed Registrar.

Bhagulpore.—In the Bhagulpore town the Civil Surgeon's clerk, and in the Colgong town a specially entertained man, register the deaths and verify the returns received weekly from the Police; and in the latter town the Municipal Commissioners have, under a resolution in meeting, consented to supervise systematically the registration in their respective wards, and to report the result to the Chairman.

Hazaribagh.—Here the Sub-inspectors and Head-constables have been made to submit weekly diaries exhibiting the names of the villages in which inquiries regarding the occurrence of deaths had been instituted by them. This is a good plan.

Measures adopted in this Office to improve Registration.

9. The information under this head is precisely the same as that detailed in the Annual Report of this Department for 1884—*vide* paragraph 5 and clauses 1, 2, 3, and 4 thereof—and need not therefore be reproduced in this Report. I have only to mention that I have reason to believe that the measures in question have worked satisfactorily.

Prospects of improvement in Registration.

10. It is true that appreciable advances in registration have been made during recent years, but it is equally true that there is yet very considerable room for further improvement; for a record, indicating that, on the whole, deaths were registered at the rate of 23 per 1,000 of population, cannot, independent of the many individual defects already pointed out, be accepted as even an approximately correct one for Bengal. The low standard of registration in Bengal is prominently exposed when compared with the returns* of some of the other Provinces in India. Nevertheless, the improvement which has already been steadily achieved year by year affords the hope that accuracy will be ultimately attained. This highly desirable end will be greatly facilitated when the Village Watchman's Act (now under consideration by the Bengal Legislative Council) becomes law and is brought into operation. Under its provisions the registration of births and deaths in all villages, excepting those in Chota Nagpore and the Sonthal Pergunnahs, has been made compulsory, as every householder is bound under penalty to report the events to some member of the Punchayet appointed in his village; then every Punchayet is bound, also under penalty, to register the events and to transmit the contents of his register, through the village watchman, to the officer in charge of the police-station in which the village is situated, the village watchman being also punishable if he omits to deliver at the police-station the record of the events given to him by the Punchayet. If these agencies are properly utilised, a complete organisation for the collection of the statistics will be provided for the Province. I have already shown in my Report for 1884 how the District and Local Boards and the Union Committees, shortly to be appointed under the Local Self-Government Act of 1885, can, by means of their position and the influence they can bring to bear on the people, co-operate in promoting the registration of births and deaths. In addition to the great assistance they can themselves render in this direction, they will possess, in the Village Watchman's Act above alluded to, the required machinery for carrying out the work systematically and efficiently. It is to be hoped that they will use every endeavour to render registration complete and accurate.

	Ratio per *mille* in 1884.		Ratio per *mille* in 1884.
* Assam	35·20	Central Provinces ...	27·30
North-Western Provinces and Oudh ...	35·04	Berar	24·60
Punjab	27·30	Bombay	24·83

Extension of the Compulsory Registration Act IV (B.C.) of 1873.

11. This law was extended during the year under review to the Chatra Municipality in Hazaribagh. This brings up the number of localities in which it is in operation to 117 towns and one rural area in Darjiling. Prosecutions for breaches of the

provisions of this enactment were instituted in the Municipalities named in the subjoined table, with the results therein indicated—

Districts.	Towns.	Number prosecuted.	Number convicted.	Number acquitted.	Number struck off.	Number pending.	Amount of fines realised.	Ratio per 1,000 of Population.	
								Births.	Deaths.
							Rs. A. P.		
Burdwan ...	Burdwan	14	13	1	......	......	5 6 0	27·46	41·46
	Culna	4	4	......	......	......	1 0 0	Not under registration.	32·10
	Cutwa	1	1	......	......	......	0 2 0	Ditto.	39·09
	Damhat	1	1	......	......	......	0 4 0	Ditto.	28·42
Bankura	Bishenpore	1	1	......	......	......	2 0 0	26·68	22·60
Midnapore ...	Tumlook	8	7	1	......	......	1 14 0	Not under registration.	27·29
	Ghattal	14	12	2	......	......	2 3 0	Ditto.	21·91
	Chundrakona	2	2	......	......	......	0 4 0	Ditto.	22·03
	Khirpai	2	2	......	......	......	1 0 0	Ditto.	26·52
Hughli including Serampore.	Hughli	9	8	1	......	......	5 4 0	21·90	34·17
	Serampore	4	4	......	......	......	1 10 0	28·30	35·36
	Uterpara	2	2	......	......	......	0 6 0	20·87	28·31
	Bansberiah...	9	5	4	......	......	0 14 0	24·74	44·51
Howrah	Howrah	5	4	......	......	1	2 8 0	23·49	26·83
24-Pergunnahs ...	Suburbs of Calcutta ...	13	6	6	1	......	3 8 0	20·31	44·81
	South Suburban	8	8	......	......	......	3 10 0	Not under registration.	16·58
	Baranagore	28	15	9	1	3	11 8 0	Ditto.	27·04
	North Dum-Dum... ...	1	......	1	......	......	......	Ditto.	27·49
	South ditto	2	2	......	......	......	2 8 0	Ditto.	15·52
	North Barrackpore ...	3	3	......	......	......	1 12 0	Ditto.	25·80
	South ditto	9	5	4	......	......	13 0 0	Ditto.	26·47
	Naihatti	9	9	......	......	......	4 0 0	Ditto.	35·29
Nuddea	Kishnaghur	1	1	......	......	......	0 4 0	18·05	26·31
	Kushtea	14	12	2	......	......	Not stated	Not under registration.	24·90
Murshidabad ...	City Murshidabad ...	11	8	3	......	......	9 10 0	Ditto.	42·00
	Jungipore	17	13	1	3	......	1 14 6	Ditto.	31·94
Rajshahye ...	Beauleah	8	6	1	1	......	12 14 0	22·33	31·42
	Nattore	5	5	......	......	......	3 12 0	Not under registration.	34·63
Rungpore ...	Rungpore	8	7	1	......	......	4 4 0	Ditto.	40·61
Bogra	Sherpore	2	2	......	......	......	2 0 0	Ditto.	48·29
Dacca ...	Dacca	27	23	3	......	1	10 4 0	17·00	32·29
	Narainigunge	9	7	1	1	......	8 0 0	22·05	22·76
Tipperah	Comillah	14	10	1	3	......	6 2 0	29·54	20·65
	Brahmanberiah	10	8	1	1	......	6 2 0	37·84	25·76
Patna	Patna	1	1	......	......	......	0 4 0	32·83	......
Gya	Gya	1	......	1	......	......	......	34·11	52·35
Mozufferpore ...	Hajipore	2	2	......	......	......	1 0 0	Not under registration.	19·53
	Sitamurhi	1	1	......	......	......	1 0 0	34·44	58·12
	Durbhanga	26	24	2	......	......	38 2 0	32·42	37·33
	Madhubani	1	1	......	......	......	0 4 0	Not under registration.	16·53
Sarun ...	Sewan	13	13	......	......	......	3 0 0	25·62	38·10
Chumparun ...	Motihari	4	4	......	......	......	5 0 0	Not under registration.	......
	Bettiah	3	3	......	......	......	2 0 0	38·28	37·76
Monghyr ...	Monghyr	10	9	1	......	......	5 4 0	24·33	34·44
	Jamalpore	1	1	......	......	......	1 0 0	53·23	58·02
Bhagulpore ...	Bhagulpore	119	1	8	110	......	2 0 0	40·41	46·75
Purneah	Purneah ...	14	12	2	......	......	1 8 0	20·37	38·89
Cuttack	Cuttack	10	10	......	......	......	11 14 0	18·28	21·97
	Total ..	481	298	57	121	5	201 15 6		

The results above tabulated, compared with those in the similar table of 1884, show that 481 against 396 persons were prosecuted in 48 against 42 towns; that, of this number, 298, or 62 per cent., against 316, or 79 per cent., were convicted; and that the fines imposed on, and realized from the recusants amounted to Rs. 202 against Rs. 240. This comparison indicates a small but not satisfactory improvement, particularly as in the great majority of the towns a smaller number of births than deaths were registered. It is noticeable that of 119 cases brought up in the Bhagulpore town no less than 110 were struck off the file, showing great want of judgment on the part of the prosecution.

Changes affecting Circles of Registration.

12. The principal revisions under this head consisted of interchanges of villages between thanas, removals of villages from one district or thana to another, transfers of head-quarters, amalgamation of towns or unions with thanas, creation of new municipalities, &c. These changes, however, did not affect the total population under registration in the Province.

BIRTH STATISTICS.

Number born.

13. The number born during the year under review in the 46 towns under registration amounted, eliminating 1,287 still-births, to 41,133, or at 24·71 per 1,000 of population numbering 1,664,577, against 39,640 births, or at 23·51 per 1,000 in the preceding year. The birth-rate contrasted with the death-rate in the same area, which amounts to 31·70 per 1,000, shows that the latter was not even overtaken by the former, but that, on the contrary, there was an excess of deaths over births to the extent of 11,640, or in the proportion of 6·99 per 1,000.

14. The following towns returned the highest proportions of births :—

	Ratio per mille.		Ratio per mille.
*Jamalpore in Monghyr	53·23	*Sitamurhi	34·44
*Bhagulpore	40·41	*Gya	34·11
*Bettiah	38·28	Patna	32·93
*Brahmanberiah	37·84	Durbhanga	32·42
*Revilgunj	37·30	Comillah	29·54
Shaikpura	36·03	*Jamalpore in Mymensing ...	29·33
*Kendrapara	34·97		

The towns distinguished by asterisks have returned good results during the past three to five years.

15. While, on the whole, as above stated, the deaths exceeded the births, the following Municipalities formed exceptions to the rule :—

Towns which recorded Births in excess of Deaths.

	Rate of excess per 1,000 of population.		Rate of excess per 1,000 of population.
*Brahmanberiah...	12·08	*Bankura	2·66
*Comillah	8·89	*Mokamah	2·40
*Kendrapara	7·33	*Jamalpore in Mymensing ...	1·91
Bishenpur	4·08	*Bettiah	·52
		*Behar	·45

In the Municipalities distinguished by asterisks births exceeded deaths during the past three to five years.

16. Of the aggregate number of children born, 21,933 were boys and 19,200 girls, yielding the proportionate ratios to population of 13·17 and 11·53 per 1,000, respectively, against 12·65 and 10·86 per 1,000 in the preceding year. The percentage of male to female births was 114 against 116. These figures indicate that both the male and female birth-rates were in excess of those of the preceding year, and that, as usual in Bengal, more boys were born than girls.

Births according to Sex.

17. The table in the margin exhibits the events distributed into the classes or nationalities among whom they occurred. The figures indicate that relatively, with reference to the populations of the respective communities, the birth-rate was highest among the Christians, and in the next degree and nearly in equal ratio, among the Hindus and Mahomedans, eliminating the other denominations.

Births according to Class or Nationality.

	Deaths.	Ratio per mille.
Christians	497	28·17
Hindus . ..	29,168	24·96
Mahomedans	11,453	24·24
Budhists	28	13·23
Other classes	87	21·79

18. Under this head 432 births, divided into 228 males and 204 females, were recorded during the first three quarters of the year. The returns of the fourth quarter have not been received.

Births among Non-Asiatics and Mixed Races.

DEATH STATISTICS.

19. The mortuary statistics of the year were registered among a population numbering 66,163,884, of whom 2,277,055 belong to the urban circles and 63,886,829 to the rural, and were recorded in 647 (94 urban and 553 rural) main registering circles. The distribution of the population according to sex and nationality is detailed in the margin.

Population and Area under Registration.

According to Sex.	
Males ...	32,832,216
Females ...	33,331,668

According to Class or Nationality.	
Christians ...	101,884
Hindus ...	42,953,029
Mahomedans ...	21,361,957
Budhists ...	79,721
Other classes ...	1,667,293

20. Excluding 21,111 who were born dead, 1,504,745 persons were reported to have died from diseases during the year under notice from among the population mentioned in the above paragraph, being at the rate of 22·74 per 1,000 in opposition to 20·83 per 1,000 in the preceding year, indicating that the mortality had increased by 1·91 per 1,000.

Number and proportion of Deaths to Population.

21. To the mortality of the year the urban circles contributed 72,024 deaths, or in the proportion to population of 31·63 per 1,000, and the rural 1,432,721 deaths, or at 22·42 per 1,000. In 1884 there died in the urban circles 67,443 persons,

Comparative mortality in the Urban and Rural Circles.

or at 27·43 per 1,000, and in the rural 1,311,167, or at 20·58 per 1,000. A comparison of the casualties of the two years shows an enhancement of mortality during the year under notice in both circles, viz., of 4·20 per 1,000 in the former and 1·84 per 1,000 in the latter, indicating that, contrary to the experience of the last year, the urban circles were on the whole unhealthier than the rural.

22. *Mortality from Specific Death Causes.*

The above information is furnished in the marginal table, compared with the similar information of the preceding year and of the lustrum 1880-84. The figures in it indicate that, while there was a sensible reduction in the casualty rate from small-pox, the mortality from every other death-cause was higher in the Province, as well as in its urban and rural divisions, than during both the periods with which comparison is instituted, excepting that the fatal result from fever during the quinquennium 1880-84 was greater in the urban circles. It is also noticeable that, as in 1884, the rural circles suffered at a higher rate from fever than the urban.

	PROPORTION OF DEATHS PER 1,000 OF POPULATION.								
	In 1885.			In 1884.			In 1880-84.		
	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.	Urban.	Rural.	Combined.
Cholera ...	5·22	2·53	2·62	3·81	1·96	2·03	3·82	1·52	1·50
Small-pox ...	·33	·14	·14	1·10	·24	·28	·55	·25	·26
Fever ...	14·40	15·79	15·75	12·89	14·66	14·60	15·17	13·35	13·42
Bowel-complaints.	4·12	·85	·90	3·24	·79	·88	3·67	·72	·83
Injury	·50	·43	·43	·44	·36	·37	·42	·34	·34
Other causes ...	7·02	2·66	2·81	5·91	2·64	2·66	5·96	1·98	2·13
ALL CAUSES ...	31·63	22·42	22·74	27·43	20·58	20·83	29·05	18·19	18·59

23. *Mortality in Bengal, Behar, Orissa and Chota Nagpore.*

The mortality per mille of population from the principal death-causes in the four great divisions of the Province is marginally exhibited in the order of relative severity of each disease. The figures show that Orissa took the lead in mortality from cholera, small-pox and bowel-complaints, and Bengal from fever; and that the lowest death-rate from cholera was returned by Chota Nagpore, from small-pox and bowel-complaints by Bengal, and from fever by Orissa.

Cholera.		*Small-pox.*	
Orissa ...	5·27	Orissa	·34
Behar	2·83	Behar	·27
Bengal	2·34	Chota Nagpore ...	·11
Chota Nagpore ...	1·51	Bengal	·05
Fever.		*Bowel-complaints.*	
Bengal	16·79	Orissa	3·19
Behar	16·33	Chota Nagpore ...	1·11
Chota Nagpore ...	11·77	Behar	·85
Orissa	6 72	Bengal	·78

24. The marginal figures, which illustrate the seasonal incidence of mortality from all diseases, again show that the fourth quarter of the year is the most fatal to life in the Province.

Seasonal incidence of the Diseases.

	Deaths in 1885.	Deaths in 1880-84.
First quarter	320,395	280,863
Second ,, ...	331,887	282,614
Third ,, ...	386,283	277,136
Fourth ,, ...	466,180	389,797

25. In the year under notice 24·65 per 1,000 of the male population and 20·86 per 1,000 of the female died, the proportion of male deaths to every 100 female deaths being 116. The corresponding figures of the preceding year are male deaths 22·81 per 1,000, female 18·88 per 1,000, and percentage of male to female deaths 119; and of the lustrum 1880-84, male deaths 20·50, female 16·71 per 1,000, and percentage of male to female deaths 120. The results disclose the same feature throughout from 1880 to 1885, viz., that the male deaths exceeded the female.

Mortality according to Sex.

26. Under this head the interesting point for consideration is the mortality among infants, children, and the aged, for the ages at death among these classes can be determined with greater exactness than those among the intermediate classes or adults, which are known to be returned with little precision, very few natives being acquainted with their real ages. Looking, then, into the

Mortality according to Age.

returns we find that the highest death-rates were reported to have occurred among infants, children, and the aged. The proportions are given in the margin, compared with the average figures of the three preceding years for which data are available. The higher ratios of 1885 are in a great measure associated with improving registration, but the record is yet defective.

	In 1885.	In 1882-84.
Under 1 year	118·94	102·33
1 to 5 years	25·02	21·63
50 to '60 ,, ...	33·36	29·75
60 years and above	55·55	46·23
Mean rate for adults	15·97	14·35

27. Marginally are shown the casualty rates among the different classes of the communities which compose the population under registration exhibited in paragraph 19, contrasted with similar data for the quinquennium immediately preceding. Of the three chief nationalities, the Christians on the whole suffered least during both periods, and the Hindus and Mahomedans almost equally in 1885, but not so during the lustrum above indicated, when the Mahomedans took precedence of the Hindus.

Mortality according to Class or Nationality.

	In 1885.	In 1880-84.
Christians	12·46	12·51
Hindus	23·09	18·36
Mahomedans	22·71	19·26
Budhists	15·05	6·10
Other classes	14·80	16·48

28. 495 deaths (males 340 and females 155) where reported from among these classes during the year, excluding the fourth quarter, for which no returns were received, and of them 56 died from cholera, 8 from small-pox, 88 from fever, 69 from bowel-complaints 32 from injury, and 242 from other causes.

Deaths of Non-Asiatics and Mixed Races.

29. *Births and deaths in Calcutta in* 1885 *compared with the same events in the Bengal Towns.*

The above information is tabulated in the margin. The figures presented in this table indicate that, on the whole, the Bengal towns excelled Calcutta both in birth and death registration; the casualty rates from cholera, bowel-complaints and fever being greater. But the higher mortality from the last named disease was, however, balanced by the large excess in Calcutta in death-rate from the maladies classed under the head of "other causes," due no doubt, to some extent, to Calcutta possessing better means of diagnosing disease than the Bengal towns, where many deaths attended with febrile symptoms are through ignorance recorded as having occurred from fever.

	Ratio of Births per 1,000 of Population.	Ratio of Deaths per 1,000 of Population from—						
		All causes.	Cholera.	Small-pox.	Fever.	Bowel-complaints.	Injury.	Other causes.
Calcutta	19·29	29·33	3 70	·35	8·84	3·82	·44	12·16
Bengal Towns ...	24·71	31·63	5·22	·33	14·40	4·12	·50	7·02

30. *Mortality of Natives in the* *9 *Cantonments in Bengal.*

In the Cantonments in Bengal, 727 natives died, being in the proportion of 21·49 per 1,000 of average population which amounted to 33,829, against 24·35 per 1,000 during the preceding year. The distribution of the gross mortality into its different causes stood as submitted in the margin in contrast with the results of the preceding year. The comparison indicates that the Cantonments enjoyed better health during the year under review, the casualties from every death cause, excepting injury, having diminished, small-pox showing no deaths. Darjiling suffered the most, Alipore the least, and the rest of the Cantonments intermediately, *vide* figures in the margin.

	Ratio per *mile*. In 1885.	Ratio per *mile*. In 1884.
Cholera	1·09	1·17
Small-pox	......	·74
Fever	12·09	12·56
Bowel-complaints	1·92	2·90
Injury	·62	·59
Other causes	5·76	6 35

	Ratio per *mille*.		Ratio per *mille*.
Darjiling ...	41·66	Dinapore... ...	20·80
Dorunda ...	35·07	Dum-Dum ...	16·57
Buxa	26·81	Fort William ...	14·61
Cuttack	24·53	Alipore ...	12·07
Barrackpore ...	21·05		

* There were 11 Cantonments in 1884, but troops ceased to occupy Hazaribagh and Segowli in 1885.

Port of Calcutta.—*Sickness and Mortality in—*.

31. During the year 1885 the number of ***European Seamen*** who entered the Port amounted to 23,573, of whom 21,449 were new arrivals, the daily average number present being 1,693. The admission into hospital for, and the casualty rates from, the different death causes which were in operation during the year under review among this class of seamen stood as indicated in the subjoined table, contrasted with the similar information for the preceding year:—

Among European Seamen.

1	2				3			
	In 1885.				In 1884.			
Sickness.	Admissions into hospital.	Deaths.	Ratio per cent. of deaths to treated.	Ratio of deaths per 1,000 of estimated population.	Admissions into hospital.	Deaths.	Ratio per cent. of deaths to treated.	Ratio of deaths per 1,000 of estimated population.
In Hospital.								
Cholera	16	7	43·75	4·13	67	36	53·73	21·37
Diarrhœa	102	......	...	......	125	3	2·40	1·78
Dysentery	116	6	5·17	3·54	80	2	2·50	1·18
Fever, enteric	4	1	25·00	·59	7	5	71·42	2·96
" malarious	194	2	1·03	1·18	158	2	1·26	1·18
" simple ...	344	......	... ...	......	207	......	......	......
Scurvy	18	......	......	......	24	1	4·16	·59
Small-pox ...	3	...	......	......	7	......	....	......
Sunstroke or heat apoplexy ...	5	3	60·00	1·77	13	1	7·69	·59
Other diseases	1,179	21	1·78	12·40	1,248	26	2·08	15·43
Total	1,976	40	2·02	23·62	2,026	76	3·75	45·13
Out of Hospital.								
Cholera	......	1	......	·59	......	1	......	·59
Sunstroke ...		1	.	·59	......	2	......	1·18
Congestive fever	......	... ..	...	...	......	1	... ..	·59
Drowned in Port	.	9	......	5·31	......	21	......	12·47
Other diseases ...	...	1	....	·59	......	6	......	3·56
Total	... .	12	.. ...	7·08	.. ...	31	......	18·40
Grand Total	1,976	52	2·02	30·71	2,026	107	3·75	63·53

The comparison instituted in the above table indicates—

(1) That of the total number of seamen, 1,976 were admitted into hospital for all diseases, and that of the admissions 40 died in hospital, representing a death-rate of 23·62 per 1,000 of average strength, as opposed to 2,026 admissions with 76 deaths, or at 45·13 per 1,000 during the preceding year; and that in addition there occurred out of hospital three deaths from diseases and 9 from drowning, thus raising the total death-rate to 30·71 per 1,000 against 63·53 per 1,000 in 1884.

(2) That the admissions into hospital for, and the mortality from, cholera were considerably less; that enteric fever displayed less severity; that for malarious fever the admissions were larger, but the death-rate was the same; that the admissions for sunstroke were less, but the mortality was greater; that both the admissions and casualty rate from dysentery were greater; that no mortality occurred from diarrhœa, simple fever, scurvy and small-pox, the admissions for these diseases being also smaller, excepting with regard to simple fever; and that both admissions and deaths from the maladies classed under the head "other diseases" had diminished.

Fuller particulars regarding the diseases above specified will be submitted in the subsequent sections of this Report which deal with the same diseases as they occurred in the Province at large; but it should be stated here that a review of the figures given in the foregoing table shows that, on the whole, the year under notice was an exceptionally favourable one for the European

	Admissions into hospital.	Ratio of deaths per 1,000 of population from—		
		Cholera.	Other diseases.	Total.
In 1885	1,167	4·1	19·4	23·6
" 1884	1,203	21·8	23·7	45·1
" 1883	1,047	19·8	23·6	43·5
" 1882	1,259	22·8	29·0	51·8
" 1881	1,332	24·0	24·0	48·0
" 1880	1,432	10·0	25·0	35·0

seamen. Extending the comparison further, it is also seen that their health status was better than even during the five years preceding 1885, *vide* figures cited in the margin.

Deaths at Sea.

32. Forty-six deaths, against 37 in the preceding year, occurred at sea among European seamen. These casualties occurred, from drowning 19, falling from aloft, &c., 6, cholera 2, small-pox 1, heat apoplexy 2, heart-disease 5, and dropsy, dysentery, &c. (details not furnished) 11.

Native Floating Population.

33. One hundred and three deaths were reported to have occurred among the *Native Floating Population*, numbering 25,409, which represents a death-rate of 4·05 per 1,000, against 197 deaths, or at 7·75 per 1,000, during the preceding year. Details of this mortality, indicating the diseases which brought it about and the casualty rate from each death-cause, &c., are furnished in the margin. This record is on the face of it defective. Many deaths could not have been reported, and then there is the fact that the sick among the up-country boatmen invariably go to their homes if the nature of the disease they are labouring under admits of their getting away. The only approximately correct record are the figures representing the mortality from cholera and small-pox. With regard to these diseases, it will be seen that they were less fatal than in the preceding year, cholera considerably so.

SICKNESS.	In 1885.				In 1884.			
	Total deaths among Native Floating Population.	Ratio of deaths per 1,000 of population.	Number of Native Floating Population who entered hospital.	Deaths among this number.	Total deaths among Native Floating Population.	Ratio of deaths per 1,000 of population.	Number of Native Floating Population who entered hospital.	Deaths among this number.
Cholera	59	2·32	25	14	138	5·43	95	38
Diarrhœa	...	...	11	...	...	...	4	...
Dysentery	4	·15	5	2	2	·07	5	1
Fever—malarious ...	12	·47	24	2	5	·19	30	...
" —simple	...	...	...	...	10	·39	...	...
Small-pox	3	·11	4	3	5	·19	9	4
Sunstroke or heat apoplexy	...	...	...	...	...	...	1	...
Other diseases	25	·98	128	10	37	1·45	157	19
Total ...	103	4·05	197	31	197	7·75	301	62

Health and treatment of Lascar crews on foreign voyages.

34. 28,131 lascars arrived in the Port and 27,847 departed from it. The corresponding figures of the preceding year were 24,962 and 25,253 respectively, indicating an increase in both arrivals and departures. There occurred 43 deaths during the voyage among this class of seamen, which, calculated on the average population afloat—10,003—gives a death-rate of 4·28 per 1,000 against 27 deaths, or at 2·94 per 1,000 in 1884, showing that the mortality was much greater. It appears that, with one exception, the treatment of these men during the voyage was good. The complaint in this case was that they had received no lime-juice at sea. This complaint having been substantiated at the Shipping Office, compensation was granted.

35. The reports demonstrate that of the 45 districts in the Province 24 enjoyed fairly good health, due chiefly to absence of epidemic prevalence of disease, and that the 21 named in the margin were markedly unhealthy, the causes of insalubrity being excessively fatal prevalence of cholera, or fever, or both, and in some cases of bowel-complaints. Some of the local officers, while admitting that the year was an unhealthy one for their districts, ascribe the numerical increase in the number of deaths partly to improved registration; and again others, such as those of Julpaiguri, Darjiling and Lohardugga, refer the entire increase to the same cause. The Deputy Commissioner of Darjiling is of opinion that the year, which was distinguished for abnormally heavy rainfall, was the healthiest year known in his district for over a decade. The Deputy Commissioner of Julpaiguri says that the clearance of jungle for the establishment of tea-gardens and improved cultivation, and consequently general prosperity, have tended to improve the sanitary condition of the district. The Duars are distinctly more healthy than they were some years ago. On the other hand, the tea districts are attracting people not only to Julpaiguri, but also to

GENERAL HEALTH OF THE PROVINCE.

Healthy and unhealthy districts.

Hughli.	Sarun.
Serampore.	Chumparun.
Dinajpur.	Monghyr.
Rungpur.	Bhagulpore.
Bogra.*	Purneah.
Chittagong.	Sonthal Pergunnahs.*
Tipperah.	Maldah.
Gya.*	Cuttack.
Shahabad.*	Poori.
Mozufferpore.	Hazaribagh.
Durbhanga.*	

Dam-Dim and other places, where markets have been established and bazars are springing up, which are likely to call for some measures in the interests of sanitation ere long. The Magistrate of Balasore ascribes the very great improvement in health which has occurred, to the increased prosperity of the people from a long succession of good harvests and high prices. The people are known to be improving their houses and buying extra furniture and better food; and this superior style of living may have influenced health beneficially.

36. There was some cause for complaint with regard to the agricultural outturn of the year, so far as the staple articles of diet on which the people subsist are concerned. The table in the margin exhibits the prices which prevailed during the year for these articles. It will be seen that, on the whole, while the cost for wheat had diminished, the prices for the other articles were higher, particularly for rice. Examined in detail, the harvest of the year is found to have been good in 5 districts, above average in 13, and equal to average in 10; but below average in 16. The deterioration in these 16 districts was due to the usual fluctuation associated with rainfall and to heavy inundations, which formed a characteristic feature of this year in a great portion of the Province, of the direct effects of which on public health I shall presently speak. In the districts on the marginal list in the immediately preceding paragraph, which are distinguished by asterisks, the impairment of health is reported to have been brought about to some extent by distress caused by high prices for food-grains. Other districts also, viz. Burdwan, Midnapore, Jessore, Murshidabad, Rajshahye, Faridpur, and Maldah suffered similarly from the same cause. As usual, the distress prevailed most among the labouring classes, the poor agriculturists, the aged, diseased, and feeble, and among women with children, who were widowed or whose husbands had left them to seek employment elsewhere. In some districts, such as Burdwan, Midnapore, Murshidabad, Gya, Cuttack and Balasore, gratuitous aid had to be given to those who could not work and relief works had to be improvised for the able-bodied, and loans under the Agriculturists Loans Act had to be advanced to agriculturists. Notices of a few prominent instances of the prevalent distress will not be out of place here. In parts of Rajshahye the poorer class had to live on unwholesome vegetables, which is said to have caused cholera and much sickness. The Civil Surgeon of Bogra attributes the high mortality which prevailed in the district to scarcity of food-grains. In many places in Faridpur, fever and sporadic cases of cholera were said to have occurred from the same cause. Many stragglers appear to have come into the town of Gya to die, having been driven from their homes by want. The Magistrate of Durbhanga thinks that the high mortality of the year—the highest on record during the past five years—was in part due to the bad and insufficient food with which the lower classes were compelled to be contented. The Civil Surgeon of the Sonthal Pergunnahs reports that the dearness of food-grains must have to some extent lowered the stamina of the labouring and poorer classes, and rendered them more liable to climatic influences and fatal diseases. On the other hand, the Magistrate of Shahabad notes, "there is a common belief that when prices fall the public health deteriorates, and the year under notice was an illustration of it."

Agricultural out-turn.

	Prices per maund in 1885.	Average prices of the five preceding years.	Difference in 1885.	Prices per maund in 1884.	Rainfall. In 1885.	Rainfall. Average of preceding years.
	Rs A. P.	Rs A. P.	A. P.	Rs. A. P.	Inches.	Inches.
Common Rice ..	2 8 7	1 13 8	10 11 I	2 8 1	70·24	66·81
Wheat	3 7 3	4 4 2	12 11 D	4 0 9		
Pulses	2 7 6	2 4 9	2 9 I	2 6 11		
Fish	7 10 2	7 4 11	5 3 I	7 7 8		

37. The inundations caused by the abnormal rainfall of the year were unusually extensive. While, on the one hand, they proved a calamity by destroying and damaging the agricultural outturn wholly or partially, and by causing heavy loss of cattle, they exercised, on the other hand, a great power for good by diminishing sickness in the great majority of the localities in which they prevailed. Of this I was persuaded during my winter tour in Murshidabad, Burdwan, Maldah and Purneah, and there is a concensus of opinion

Inundations.

that fever and bowel-complaints had been greatly reduced by them. A few of the local officers are, however, of a contrary opinion, particularly with regard to fever. The explanation accounting for the reduction of sickness in association with inundations is simple and natural. The inundations replenished the tanks which, when the sediment had subsided, afforded a supply of good and wholesome drinking water; filled bheels and old river beds with a fresh supply of water in the place of an impure stagnant one; swept through villages, carrying off accumulated filth; and deposited a fertilizing silt on the fields.

It would be travelling out of the limits of my Report to furnish the full history of the inundations in the districts. I will therefore confine myself to notices of the most marked instances of improvement or deterioration in health generally traceable to them, and in the sections of my Report devoted to the histories of cholera and fever will be found accounts of the direct effects they had on the prevalence and fatality of these diseases. The sub-divisional officer of Ranaghât in *Nuddea* reports that the bhils in the north of his sub-division, which originally formed the beds of the Hangore, Jamuna, Gomati, and other streams which intersect the sub-division, and which had in course of time silted up, were washed out, with the advantage that their water is now potable and has met a crying want of the sub-division. Moreover, the impurities having been swept off, there is less chance of future sickness. The observations of Dr. ffrench-Mullen, Offg. Deputy Sanitary Commissioner, Metropolitan Circles, go to show that in some villages visited by him in thanas Meherpore, Hanskhali and Santipore, in this district, there was no fever or cholera, and in some very little of them; that the general health was good, scores of adults and children who came around him looking comfortable and well fed, although they pleaded poverty and said that they had been reduced to one meal a day owing to the scarcity. In one village—Hanskhali—the people were gradually dying off, from debility caused by the severe wave of fever which passed over the village in 1884; but here even the general health had improved, and there was no cholera. The mortality among the cattle was, however, very great, due to *basunti*, or swelled necks, caused by eating grass which had been submerged and become half rotten. In the sub-divisions of Bongong, Magurah, and Jhenidah in *Jessore*, no disease could be traced to the floods, and Dr. Mullen, who visited some of the villages in thana Bongong, confirms this opinion, except that in village Srimuntapore there was much chronic fever. The Medical officer of *Maldah* reports that the effect of the flooding was salutary; cholera and fever, which generally appear with great severity in the cold weather, were much less this season, and the towns of English Bazar and old Maldah enjoyed great immunity from the latter disease. On the other hand, the Assistant Surgeon of *Faridpur* attributes the high death-rate in the district from fever during November and December to the inundations. In *Shahabad*, where the inundations were very extensive, the Civil Surgeon has no doubt that the great prevalence of malarial fever was due to them. The Civil Surgeon of *Mozufferpore* observes that, as in previous years, he failed to trace any marked connection between inundations and outbreaks of malarious disease. The Civil Surgeon of *Chumparun* states that it is not proved that the greater mortality of the year from cholera or fever was due to the inundations, that the towns of Bettiah and Motihari, where the diseases were most prevalent, were not inundated; but that it should be remembered that the rise of the river caused a corresponding rise in subsoil water. In *Bhagulpore* it was observed that during July, August and September, when there were considerable floods, fever and cholera prevailed. The sub divisional officer of Pakour in the *Sonthal Pergunnahs* remarks that during the floods no bad effect on health was perceptible, but that when the water began to subside, fevers commenced to increase. The Civil Surgeon of *Poori* reports that the apparent effect of the inundation was that fever increased in November and December; but it is to be observed that the inundation occurred in June.

Though the opinions given are somewhat contradictory, and some are given after insufficient opportunity for inquiry, still I think it may be accepted that in the districts of Lower Bengal floods from the Ganges andi ts offshoots are beneficial, while, as to their effects in the districts in Behar, more observations are required.

38. The cyclonic gale and storm-wave, which occurred in Cuttack, appear to have, in addition to their fearful immediate effects, which will be presently referred to, involved, according to the Civil Surgeon, in their train much suffering from fever and cholera generally in the affected localities, and severe fever and dysentery in thanas Kendrapara, Aul, and Patamundi, referable to exposure and hardship, and chiefly to the water-supply having not only been rendered brackish for the time, but also contaminated by the bodies of the drowned, by fallen trees, and by other causes of impurity. The Deputy Sanitary Commissioner, Orissa Circle, notes that there was much cholera in the Kendrapara sub-division, traceable to the effects of the storm-wave. But the mortuary records do not support the above assertions, for there occurred 1,765 less deaths from cholera and 3,322 from fever during October, November and December, as compared with the mortality from these diseases during the period anterior to the occurrence of the storm-wave.

Cyclonic gale and storm-wave in Orissa.

This cyclonic storm occurred on the 22nd September. It moved on from False Point in a north-westerly direction across this district towards Balasore and Chota Nagpore, affecting chiefly thanas Aul, Patamundi, Kendrapara, Jajpore and Dharmsala. The flood-wave rose to a height of from 16 to 18 feet, carried away everything before it, and overwhelmed whole villages from which there were but few and miraculous escapes, and completely changed their aspect, so that they could hardly be recognised. It caused great loss of life among human beings and cattle. It is estimated that about 10,000 to 15,000 human lives were lost, and Mr. Naidu, the Deputy Sanitary Commissioner of the Orissa Circle, who visited the affected localities, states that in thanas Jajpore, Dharmsala, Kendrapara, Patamundi and Aul, 5,570 villages were affected, of which 186 were entirely swept away, and that 2,342 persons and 13,003 cattle were killed. The sea-shore was lined with bodies whitening on the sand, and many corpses and carcasses of animals were left in the creeks, rivers, tanks, fields, ditches, &c. Several vessels became total wrecks or were seriously damaged. Houses were unroofed, huts levelled, trees uprooted, and the country laid bare, particularly in thanas Jajpore and Dharmsala. All food-supply was destroyed, and, as above stated, the drinking water was polluted. Special Hospital Assistants were deputed to the affected localities, and medicines distributed through the Police. Supplies of food were sent to the afflicted, and sweepers were employed to bury the dead and remove carcasses of animals from the water-courses and other places.

In Balasore this storm-wave was not so severe in its ravages as in Cuttack, but it laid large tracts of country under water, and did considerable damage to cattle and crops. The consequent distress was so great as to necessitate the adoption of relief measures from the money that had been subscribed for the relief of the sufferers in Cuttack. It does not appear that this disaster carried in its wake any increase of sickness in this district.

39. It should be mentioned that earthquakes occurred in Dacca, Rajshahye, Bogra and Mymensing on the 14th July. In Bogra 84 deaths were recorded from this cause. In Mymensing the damage to property was very large. Many two-storied and one-storied houses collapsed, were damaged, or so shaken as to become unsafe. The injury to property in Nasirabad was estimated at between eight and nine lakhs of rupees. In Muktagachi one man was killed by the falling of a temple. In Jamalpur two persons met their death by the fall of a zemindar's kutchery. In Sherpur town in Bogra in many places long fissures occurred in the earth, from which sand and water issued, and a quantity of coal was ejected at Dhatna, 10 miles north-west of that town; one man was killed and several women were more or less severely injured.

Earthquakes in certain districts.

SECTION VI.

HISTORY OF THE CHIEF DISEASES.

CHOLERA.

40. Cholera prevailed with almost unprecedented severity during the year under review. The recorded deaths numbered 173,767, or at the rate of 2·62 per 1,000 of the population under registration—a mortality which, it will be seen from the marginal figures, was never reached during any year of the past decade, on the records of which any reliance can be placed, excepting in 1876 and 1882. The disease visited every district, attacked 29,239 of the villages against 24,621 in 1884, and prevailed with epidemic intensity in 101 of the registering circles against 90, with marked severity in 118 against 90, and with much immunity in 415 against 432; while only 13 circles against 37 altogether escaped the scourge.

Years.	*Deaths.*	*Ratio per mille.*	*Years.*	*Deaths.*	*Ratio per mille.*
1875	108,262	1·63	1880	39,643	·59
1876	196,590	2·97	1881	79,180	1·19
1877	155,305	2·34	1882	182,352	2·75
1878	95,192	1·43	1883	90,439	1·36
1879	136,363	2·06	1884	134,421	2·03

41. To the total mortality of the year, the urban circles contributed 11,907 deaths, or in the proportion to population of 5·22 per 1,000, and the rural 161,860 deaths, or at 2·53 per 1,000. The corresponding means of the quinquennium 1880-84 were—urban, 8,114 deaths, or at 3·32 per 1,000; rural 97,093 deaths, or at 1·52 per 1,000. The enhanced fatal results of the disease were greater in the urban than in the rural circles, but only to the extent of ·89 per 1,000 of population.

Comparative mortality from Cholera in Urban and Rural Areas.

42. Of the 45 districts in the Province, 18 against 11 in the preceding year exhibited lower death-rates from Cholera, and the greatest loss of life from this cause was reported to have occurred in the marginally-named 16 districts against 12 in 1884.

Districts which suffered most from Cholera.

	Ratio per mille.		*Ratio per mille.*
Birbhum ...	6·87	Chumparun ...	3·99
Maldah ...	6·17	Burdwan ..	3·86
Puri ...	5·98	Balasore ...	3·71
Rajshahye ...	5·78	Bhagulpore ...	3·41
Cuttack ...	5·74	Hazaribagh ...	3·35
Mozufferpore ...	4·82	Southal Pergunnahs	3·30
Nuddea ...	4·25	24-Pergunnahs ...	3·07
Bogra ...	4·21	Monghyr ...	3·06

43. The noticeable features of the year under this head are:—After the scanty rainfall of January and February the mortality from Cholera suddenly rose very high in March. April and May followed the usual rule of being months in which the severity of the disease is very great. In June and July, months of heavy rainfall, the mortality subsided considerably as has been usually the case. August, usually a month of low mortality, exhibited, notwithstanding its great rainfall of 17·81 inches (the largest quantity of the year), the highest mortality. This was caused by the incidence of the disease in the Behar districts which are visited most severely in the rainy season. In August and during the early part of September heavy inundations occurred over a greater portion of the Province, and this contingency was followed by a steady reduction in cholera mortality during the months of September, October, November and December; and thus the winter prevalence of the disease, which is often the severest, was mitigated.

Seasonal incidence of Cholera in the *entire* Province

	Deaths in 1885.	*Rainfall in 1885.*	*Deaths in 1880-84.*
January ...	8,067	·21	6,536
February ...	6,880	1·26	4,560
March ...	12,395	·84	9,003
April ...	19,926	1·55	18,421
May ...	20,473	4·18	15,589
June ...	18,000	11·85	10,430
July ...	12,347	14·70	8,502
August ...	22,675	17·81	7,076
September ...	19,213	13·45	2,927
October ...	14,392	2·92	3,641
November ...	12,404	·53	7,500
December ...	11,995	·94	11,022

Seasonal prevalence of Cholera in Bengal, Behar, Orissa and Chota Nagpore.

44. *Bengal.*—There was an alteration in the normal incidence of Cholera in this Division of the Province taken as a whole. The severe phase of the disease commenced as usual in March, but instead of terminating in May, was protracted to June, and its winter prevalence was limited to January and December, the remaining months enjoying comparative immunity. The same features in the behaviour of the disease are observable in the Western, Central and Eastern districts of this Division, with the exception that the spring outbreak extended to September in the Western districts, and was limited to May (as usual) in the Eastern districts, and that the winter outbreak did not invade the Western districts excepting the districts of Midnapore and Howrah; but in these two, as also in the Central districts, the month of November also exhibited a high casualty rate.

Behar.—Here, on the whole, the severity of the disease began, as usual, to be felt in May and lasted up to November. In East Behar, however, it began one month earlier, *i.e.*, in April, and in West Behar one month later, *i.e.*, in June.

Orissa.—In this Division high death-rates from Cholera prevailed, as usual, throughout the year, but the months of greatest mortality were January and February, July and August, and November and December, the enhancement being no doubt influenced by mortality among pilgrims who passed through the Division during these months on their way to and from Puri or other shrines.

Chota Nagpore.—In this Division May to August were, as usual, the months of highest mortality; but in Hazaribagh the severity of the disease was prolonged up to November, and in Manbhum it was limited to July. Lohardugga exhibited exceptional casualty rates in August, September and October, and Singbhum only in April.

Prevalence of Cholera as delineated by the Cholera Map.

45. The map illustrating the distribution of Cholera in Bengal during the year under review, which is appended to this Report, indicates that while, on the one hand, the districts of Darjiling, Julpaiguri, Lohardugga, Singbhum, and Noakhalli excepting its Fenny sub-division, and the sub-divisions of Midnapore, of Gaibanda and Karigram in Rungpore, of Manickgunge in Dacca, of Dum-Dum in the 24-Pergunnahs, of Tajpur in Darbhanga, of Barrh and Behar in Patna, and of Aurungabad and Jehanabad in Gya, were comparatively very free from Cholera, exhibiting death-rates below 10 per 10,000 of population, on the other hand, in the undermentioned sub-divisions the suffering was very great, the death-rates in them ranging from 30 to 96 per 10,000 of population against 32 to 92 per 10,000 in 1884:—

DISTRICTS.	Sub-divisions.	Ratio per 10,000.	DISTRICTS.	Sub-divisions.	Ratio per 10,000.	DISTRICTS.	Sub-divisions.	Ratio per 10,000.
Rajshahye ..	Sudder ...	96·	Bhagulpore ...	Banka ...	49·	Shahabad ...	Bhabua ...	38·
Cuttack ...	Jajpur ...	87·	Durbhanga ...	Madhubani	49·	Chumparun ...	Sudder ...	38·
Mozufferpore	Sitamurhi	85·	Cuttack ...	Sudder ...	48·	Hazaribagh ...	Giridhi ...	38·
Birbhum ...	Sudder ...	79·	Rajshahye ...	Naugaon ...	47·	Burdwan ...	Sudder ...	37·
Nuddea ...	Ranaghat...	63·	Nuddea ...	Kushtia ...	44·	Bhagulpore ...	Mudehpur	36·
Puri ...	Sudder ...	63·	Cuttack ...	Kendrapara	44·	Monghyr ...	Jamui ...	35·
Maldah ...	District ...	62·	Mozufferpore	Sudder ...	44·	Ditto ...	Sudder ...	33·
Sonthal Pergunnahs.	Godda ...	60·	Burdwan ...	Raniganj	43·	Burdwan ...	Cutwa ...	32·
Jessore ...	Bongong ...	60·	Ditto ...	Culna ...	43·	Bhagulpore ...	Sudder ...	31·
Nuddea ...	Sudder ...	56·	Bogra ...	District ...	42·	Sonthal Pergunnahs.	Deoghur ...	31·
Puri ...	Khurda ...	55·	Chumparun ...	Motihari ...	41·	Hazaribagh ...	Sudder ...	31·
Balasore ...	Bhadrak ...	55·	Chittagong ...	Cox's Bazar	41·	24-Pergunnahs	Diamond Harbour	30·
Birbhum ...	Rampore-hat ...	53·	Backergunge	Patuakhali	39·	Jessore ...	Jenidah ...	30·
			24-Pergunnahs	Sudder ..	39·			

Cholera at Fairs.

46. From the subjoined table it will be seen that more Cholera prevailed at the Fairs than last year, and that the list is a longer one. It was, however, naturally to be expected that in a year when the disease was so diffusely spread over the Province, public gatherings could not escape. Moreover, it will be seen that at some of the Fairs, especially in Cuttack, want of precautions no doubt favoured the outbreaks, and I very much doubt whether the sanitary arrangements made at other Fairs—the Barooni Fair in Dacca,

and the assemblage of pilgrims in Puri excepted—were all that are desirable:—

Districts.	Where held.	Name of Fair.	When held.	Duration of Fair.	Number present.	Cholera Cases and Deaths.		Were sanitary precautions adopted?
						Cases.	Deaths.	
Hughli ...	Tribani	Barooni ...	April	1 day ...	20,000	7	5	Yes.
	Tarkessur	Churruk Pooja	Do.	7 days ...	100,000	9	4	Yes.
24-Pergunnahs ...	Diamond Harbour...	Gangasagor ...	January ..	15 " ...	160,328	.....	5	Yes.
	Naihatti	Chooramani ...	March ...	7 " ...	5,000	Bad type.	50	After the outbreak.
Murshidabad ...	Sudagbagh	Ruthjatra ...	June ...	8 " ..	5,000	... ..	125	Yes.
Dinajpur ...	Not stated	Alnakowa ..	November ...	Not stated	Not stated	2	1	After the outbreak.
	Not stated	Nekmurd ...	April ...	Ditto ...	Ditto ...	Not	stated	No.
Rajshahye ...	Godagari	Khatori ...	October ...	4 days ...	30,000	1	.. .	Yes.
Bogra ...	Shibganj	Mehastham .	March ...	3 " ...	1,500	......	7	Yes.
	Punchbibi	Pathoriaghatta	Do. ...	5 " ...	600	......	6	Yes.
Dacca ...	Naraingunj	Barooni ...	From 3rd November.	6 weeks...	3,282 daily average.	5	4	Yes.
	Ditto	Mongalbund	Not stated ...	Not stated	Not stated	3	......	Yes.
Maldah ...	Gajole	Barihazari ...	From 17th April.	17 days ...	500	15	10	Yes.
	English Bazar ...	Ramkilla ...	30th June ...	1 day ...	Not stated	9	9	Yes.
Cuttack ...	Jugutsingpur ...	Bhima Ekadosi.	Not stated ...	6 days ...	10,000	2	2	No.
Puri ...	Puri Town	Ruthjatra .	From 14th July	18 " ...	70,000	......	277	Yes.
		Panchakjatra	From 18th November.	5 " ...	40,000	. ....	29	No.
Hazaribagh... ...	Madhubun	Madhubun ...	February ...	Not stated	Large number.	Not	stated	No.

The following causes were reported to have occasioned some of the outbreaks of cholera tabulated above. At the fairs in *Hughli* it was ascribed to excessive heat. At the Chooramani fair in the 24-*Pergunnahs* the gathering consisted of pilgrims who were crowded to suffocation within the limited number of huts and lodging-houses which were available. On the occurrence of the outbreak all sanitary precautions were taken and medical assistance rendered, but these being insufficient to arrest the spread of the disease, the pilgrims dispersed. Steps have been taken to prevent future overcrowding. At the Ruthjatra in *Murshidabad* the outbreak was severe, and occurred among pilgrims who came mostly from the Eastern districts. All needful steps were taken for the care of the sick and the arrest of the disease. At the Mongalbund fair in *Dacca* the sanitary arrangements were bad with regard to conservancy. The places at which the two fairs—Barihazari and Ramkilla—in *Maldah* are held are situated close to vast jungles, and the water-supply was scanty and bad. At the former the jungle is denser, the soil higher and drier, and the difficulty about water greater. At Ramkilla medical assistance was rendered on the occurrence of the outbreak, and since then steps have been taken to put the tanks in order and to set apart one of them for drinking-water only. At the Barihazari fair the physical difficulties of the place are too great to allow of an expectation of preventing outbreaks of disease from time to time, especially in the dry season. The outbreak at the Madhubun fair in *Hazaribagh*, at the foot of Parisnath, is reported to have been severe in character, but the numbers of cases and casualties have not been furnished. It occurred, however, among pilgrims, a large concourse of whom had assembled, as this was the 12th anniversary of the fair, and a specially large assembly was expected. Nevertheless, no sanitary arrangements were made, and to this omission the outbreak is attributed. At the Ruthjatra or Car festival held in *Puri*, the provisions of the Puri Lodging-house Act were carefully and strictly enforced; extra establishment was entertained to attend to the conservancy and latrine arrangements; and medical assistance and medicines were provided on the road from Cuttack to Puri for the cholera-affected pilgrims. No special measures beyond those usually adopted were deemed necessary at the Panchak festival. At *Cuttack* the pilgrims were as usual attacked with cholera when they passed through the district on their way to Puri to attend the Ruthjatra. No sanitary precautions were adopted, except that the sick found near the town were taken to the Cuttack General Hospital and some to the Dharmsala Dispensary.

Incidence of Cholera in the Districts.

47. The statistical information illustrating the prevalence and fatality of Cholera in the Districts during the year under review, and the leading facts connected with its incidence, are subjoined.

BENGAL.

48. In *Bengal Proper* the prevalence and fatality of Cholera had, on the whole, diminished somewhat in 1885 in comparison with its incidence during the preceding year. Its statistics denote that the disease pervaded 12·97 per cent. of its villages, and carried off 82,382 of its population numbering 35,073,770, or at the rate of 2·34 per 1,000, as opposed to 2·71 per 1,000 in 1884. The death-rate of the quinquennium 1880-84 was, however, lower, viz., 1·76 per 1,000. Next to Chota Nagpore, this Division of the Province suffered the least from Cholera this year.

Cholera prevalence in the Bengal Division of the Province.

49. In the marginal table are presented the Cholera statistics of the several districts comprising the Burdwan Division. They indicate, (1) that in comparison with the figures of the preceding year, Cholera invaded larger areas in the Burdwan, Bankura and Birbhum, districts, notably in Birbhum, and smaller ones in Midnapore, Hughli and Howrah; (2) that while Burdwan and Howrah presented noticeably high death-rates, and Bankura, Midnapore and Hughli normal ones, the mortality was highest in the Birbhum district; and (3) that enhanced fatal results occurred in the Birbhum Burdwan, Bankura and Hughli districts, in the order named, in comparision with the outcomes of both 1884 and the quinquennium 1880-84. In seasonal incidence of the disease, while in Midnapore, Hughli and Howrah the suffering was greatest during the earlier months of the year, in the other districts it commenced in March, but lingered on much beyond June, the month of cessation of high suffering. It is, moreover, remarkable that the winter prevalence of the disease was unusually mild. The months of heaviest rainfall were June to September in all the districts.

Cholera prevalence in the Burdwan Division.

DISTRICTS.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Burdwan ...	18·76	9·47 *I*	3·86	2·22 *I*	2·18 *I*	March to August.
Bankura ...	5·22	1·00 *I*	1·72	·60 *I*	·79 *I*	Do. to September.
Birbhum ...	20·40	13·69 *I*	6·87	5·41 *I*	5·30 *I*	Do. to October.
Midnapore ..	6·62	·53 *D*	1·43	·11 *D*	·16 *I*	January to June, November and December.
Hughli, including Serampore ...	12·70	·48 *D*	1·71	·30 *I*	·40 *I*	February to May, September and October.
Howrah ...	17·24	1·20 *D*	2·16	·23 *D*	·21 *D*	January to May, November and December.
Total ...	10·30	2·44 *I*	2·61	1·07 *I*	1·19 *I*	March to August.

50. *Burdwan.*—There was considerable increase of Cholera in this district during the year, and the mortality was severe, amounting to 3·86 per 1,000 of population. Moreover, the Civil Surgeon is of opinion that prolonged cases of Cholera were frequently recorded under the head of bowel-complaints. The disease is said to have prevailed epidemically in May and June throughout the district. Every circle, excepting Selimabad, suffered severely, those named in the margin conspicuously so. Severe outbreaks occurred in certain parts of thanas Ranigunge (3·50 per 1,000), Assensole (4·48 per 1,000), Kaksa (4·69 per 1,000), and in the villages where the mines of the Bengal and Equitable Coal Companies are situated. They have again been associated with pilgrims, and, in some of these places, with bad drinking water. At Lodma and Bogunia, two villages close to the Barakur Railway station, 43 pilgrims are said to have died. I visited these villages and found them crowded with coal carters much more than with pilgrims. The very high mortality in the Culna town is attributed to its objectionable conservancy arrangements, the existence of well-privies being the chief evil. No accounts have been furnished regarding the other areas of high mortality named above.

	Ratio per mille.		*Ratio per mille.*
Ranigunge town ...	12·16	Burdwan town ...	6·25
Culna „ ...	11·55	Purbustholi thana ...	5·99
Burdwan thana ...	7·02	Ausgram „ ...	5·11
Bood-Bood „ ...	6·39		

51. *Bankura.*—Here the mortality from Cholera, although in excess of the preceding year, was not high, amounting, on the whole, to only 1·72 per 1,000 of population; but, in some of the circles, *viz.*, those cited in the margin, the

	Ratio per mille.		*Ratio per mille.*
Sonamukhi town ...	8·24	Bishenpur town ...	2·44
Bankura „ ...	3·57	Bishenpur thana ...	2·30
Sonamukhi thana ...	3·39	Indas „ ...	1·92
Gungajulghati „ ...	2·93		

suffering was great. In thanas Gungajulghati, Sonamukhi, Bishenpur and Indas, which are situated in the northern and eastern parts of the district, the insanitary conditions are, it is said, the worst imaginable. They are ill-drained with marshy land, and cess-pools with accumulations of filth, and low jungle abound. The habits of the people are very filthy, and heaping of cowdung near houses is the rule. In connection with the outbreaks in these thanas, the Assistant Surgeon in medical charge of the district has, I think, conclusively shown that the incidence of the disease is not referable to pilgrimage. The observed facts were, that of the four affected thanas, Gungajulghati and Bishenpur are situated on the pilgrim route, while the other two are far removed from intercourse with pilgrims; that even in the two former thanas the greater number of the deaths occurred in places situated in the interior; and that while the most celebrated of the festivals which attract pilgrims proceeding in large numbers to Puri, is the Ruthjattra, which, owing to its having commenced this year on the 14th July and terminated on the 1st of August rendered it necessary for pilgrims to pass through Bankura during June and July and to return during August and September, Cholera prevailed in it most severely in April and May, or during a period anterior to the pilgrimage months. The view of the question entertained in Burdwan is quite opposed to that expressed here. With regard to the state of Gungajulghati, Assistant Surgeon Ashutosh Law, Deputy Superintendent of Vaccination, Metropolitan Circles, supports the opinion of the local authorities; for he found its villages to be in an extremely filthy and insanitary condition. In an outbreak of Cholera in the Bankura town commencing in July and ending in September, the following observations, worthy of notice, were made by the Assistant Surgeon, *viz.*, that the disease was mild in character and confined to individual cases only, although there was a continuous influx of pilgrims going to Puri in July; that a number of cases occurred after the first heavy showers of rain in July; that the cases occurred simultaneously in the most crowded parts of the town, but far removed from intercommunication with the pilgrim route, which is outside the town; and that many cases of diarrhœa and dysentery prevailed at the same time when Cholera was present This outbreak was attributed to the people drinking the water of tanks which had been extremely polluted by the washings into them, by the first showers of rain, of organic matter and fœces from their banks.

52. *Birbhum.*—This district heads the list of cholera stricken districts this year. Twenty per cent. of its villages were pervaded by the disease and the mortality stood at 6·87 per 1,000 of population as opposed to only 1·46 per 1,000 in 1884, and was higher than during any of the past 10 years, the mean death-rate of the decade being 1·57 per 1,000. All the circles in the district suffered very severely, as will be seen from the marginal figures. There was a change in the seasonal incidence of the disease, for, contrary to the experience of former years when Cholera is at its minimum in July and August and all but ceases in September or October to be active again after that, this year commencing in March it was persistently fatal up to October, after which its severity rapidly declined. The history of Cholera in this district for the year under review brings out certain facts worthy of special consideration. Of local outbreaks the one which occurred in the Soori town was the severest. It is said that so severe and protracted an outbreak was not witnessed in this town within the last eight years. The first case was reported on the 2nd June as having occurred among some Bouries who had returned from the neighbouring village of Kuddea where Cholera was present. The disease reached its height in July, declined through August, and died out in the middle of September during the incessant drenching rain of that month, the rainfall of June, July and August amounting altogether to 33·42 inches, while that of September alone was 16·77 inches. Dr. Roy, the Civil Surgeon, endeavours to show that the disease had been imported and that it spread by intercommunication, but I refrain from submitting his observations, especially as the disease existed in several parts of the district at the same time. But a singular fact referred to by him is that of the friends and relatives of the Bouries, who lived in another quarter of the town

	Ratio per mille.		*Ratio per mille.*
Soori town ...	17·45	Bolpur thana ...	6·13
Dubrajpur thana ...	10·93	Moureswar „ ...	4·72
Soori „ ...	9·52	Sakulipur „ ...	4·01
Nulhatti „ ...	6·83	Ramporehat „ ...	3·65

called Bouripara, but who attended upon their sick and helped to remove their dead, two fell victims to the disease, which then attacked several people in Bouripara. It was noticed that wherever the disease appeared it confined itself to a few houses; that while the central part of the town formed the area of visitation, the outskirts, the people of which had no occasion to go to the town for their water-supply, but derived it from independent sources, were entirely free from it; and that the jail, situated close to the affected localities, also enjoyed complete immunity from it. It appears to me that nothing can illustrate better the sanitary condition of a place than the severity of Cholera during an epidemic visitation. Had the Soori town been in a good sanitary state, which it is not, no such heavy mortality would have occurred in it. Mr. Warde-Jones, the Sub-divisional Officer of Ramporehat, again took the precautionary measures for suppressing the outbreak of Cholera in his sub-division and to prevent its assuming an epidemic form, which were narrated in my Report for 1884. His endeavours were apparently attended with some success, for while in his Sub-division the mortality amounted to 5·33 per 1,000 of population in the other Sub-division of the district it was 7·86 per 1,000. The unprecedented outbreak of Cholera in the district is ascribed by the Magistrate to an unusually severe and prolonged drought, as he does not think that it was more especially due to want of village sanitation. Adverting to the drought, the Civil Surgeon notes that the water famine seemed to him to be greater than the rice famine, for he saw in Nulhatti the very puddle on the roadside strained and the water thus obtained used by the people. He adds that "this water famine afterwards became general, and water began to be sold in villages as a rare commodity, and that never within the memory of the living generation was such a season of dryness observed before."

53. *Midnapore.*—There was less Cholera in this district, and the mortality, amounting to 1·43 per 1,000, was not excessive and is less than that of the last three years during which the disease had been gaining ascendancy in this district, and in only six* of its 29 circles the suffering was severe. The prevalence of Cholera in Pataspore was attributed to great want of good drinking-water, which was also felt in many other places. On the outbreak of the disease in the Midnapore town, the pilgrims coming from the Ranigunge and Burdwan routes were made to travel clear of the town, and Dr. Peck, the Civil Surgeon, took the precautionary measures of closing against use foul tanks, cleaning drains, fumigating dirty and ill- ventilated houses to leeward of the wave of the disease, to arrest its progress. They appeared to be successful in rendering abortive an outbreak which threatened seriously to invade the town. Dr. Peck observes that on every occasion when he visited cholera-stricken localities, he found that his orders to close foul tanks in their vicinity against use was followed by a complete subsidence of the disease. The same officer quotes the following instances of the behaviour of the disease to illustrate his belief that it does not follow the chief lines of intercourse. Thanah Salbuni, which is situated directly on each side of the pilgrim road which is traversed by streams of pilgrims who sleep there, had only 11 cases of Cholera, or at ·20 per 1,000 of population; while in Midnapore, to the south of the road, the death-rate amounted to one per 1,000. Again, the towns of Chundrakona and Khirpai, both situated on the main road between Ghatal and Gurbetta, almost entirely escaped, Chundrakona, which is a large straggling town situated at a point where the roads from Ghattal, Ramjibunpore, Gurbetta and Keshpur converge, notably so, for while a large number of deaths occurred in all these towns, Chundrakona escaped with only eight casualties.

	Ratio per mille.		Ratio per mille.
* Midnapore town	... 4·26	Ghatal town	... 3·48
Moslundpur thana	... 3·94	Pataspore thana	3·46
Bhugwanpur ,,	... 3·54	Tumlook ,,	... 3·12

54. *Hughli.*—The mortality from Cholera in this district amounted to 1·71 per 1,000 of population, indicating that, on the whole, the prevalence of the disease was not very severe. Nevertheless, the areas marginally cited furnished high death-rates. It will be noticed that the towns in this district figure

	Ratio per mille.		Ratio per mille.
Hughli thana	... 6·08	Bulaghur thana	... 8·23
Uterpara town	... 4·17	Serampore town	... 3·01
Hughli ,,	... 3·87	Baidyabati ,,	... 2·98
Khanakul thana	... 3·79	Khanakul ,,	... 2·59

largely in this marginal list. I find from the local reports that the proposition to provide these riparian towns with a filtered water-supply has been rejected by a large majority of the Municipal Commissioners of Serampore as an unnecessary expense. The absolute necessity of a good water-supply for these towns has been fully shown in my Annual Report for 1883, paragraph 211, and I also exhibited in it how very severely they suffered from Cholera for a series of years owing to this want. The statistics of 1884 and 1885 indicate that these towns continued to furnish high death-rates. I hope the Government will take this question into serious consideration, and press the measure on the objectors.

55. *Howrah.*—In this district, while the disease was not very wide-spread, it caused a high mortality, *viz.*, 2·16 per 1,000 of population. The overcrowded towns of Balli and Howrah and thana Shampur suffered in the greatest degree, the death-rates in them amounting to 4·31, 4·09, and 4·00 per 1,000 of population, respectively. The disease prevailed most severely in April and May, subsided suddenly and markedly after the rains commenced, and increased again in November. Howrah has furnished no further account of its Cholera, but here the necessity of a good water-supply is evident.

56. The Cholera statistics of this Division of Bengal are furnished in the margin. They indicate a reduction in both the prevalence and fatality of the disease in every district composing it; but, on the whole, it suffered more severely than all the other divisions in Bengal. January to May and December were the months of greatest prevalence of the disease in all the districts excepting Murshidabad, where the suffering commenced later and was prolonged into July. The months of heaviest rainfall were June to September, but in Nuddea the rains were prolonged into October.

Cholera prevalence in the Presidency Division.

DISTRICTS.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per *mille*.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
24-Pergunnahs	15·49	2·67 *D*	3·07	·50 *D*	·19 *I*	January to May and December.
Nuddea ...	37·23	3·49 *D*	4·25	1·54 *D*	·02 *D*	February to May, November and December.
Jessore ...	17·92	2·26 *D*	2·69	·69 *D*	·17 *D*	January to May and December.
Khulna ...	22·49	6·95 *D*	2·09	·55 *D*	·33 *D*	January to May and December.
Murshidabad ..	14·33	8·29 *D*	2·04	2·95 *D*	·28 *D*	April to July and September to November.
Total ...	20·22	4·07 *D*	2·93	1·16 *D*	·05 *I*	January to May, November and December.

57. 24-*Pergunnahs*.—The mortality from Cholera in this district amounted to 3·07 per 1,000 of its population. While present in every circle, it displayed greatest activity in those named in the margin. The mortality in the Naihatti town, which heads this list, was contributed to, to a great extent, by an outbreak of the disease which occurred in the villages near the Gouripore mills, the deaths at one place near the Garipadigi village amounting to 20 from as many cooly huts. It is believed that the stagnant water of the village tank, which was freely used by the coolies, caused the outbreak, for on the use of this tank being prevented and copious sulphur fumigation being resorted to, the "disease disappeared almost immediately." The cooly huts are, moreover, ill-constructed, limited in accommodation, and have no ventilation, and their floors are almost on a level with the ground. The Suburbs of Calcutta continued to maintain the high mortality which has obtained in it for years. I visited this important Municipality in November and December, and found its several wards in much the same state as they were before, very few of the many suggestions for their improvement having been attended to. On page xlii of Appendix IV to this Report, a description of their present condition and a note of the very many defects calling for urgent rectification have been furnished. The Chairman of this Municipality attributes the insalubrity of the Entally ward to the drainage of Calcutta conveying an immense quantity of sewage to the Salt Water Lakes in its vicinity, and to thousands of waggons' load of sweepings, house-refuse, garbage, &c., being carried there for their reclamation. I consider his reasoning to be speculative,

	Ratio per *mille*.		Ratio per *mille*.
Naihatti town ..	9·61	Kulpi thana ...	4·28
Suburbs of Calcutta ...	7·46	Nowabgunge town ...	3·88
Joynuggur thana ..	4·47	Bhaduria thana ...	3·79
North Suburban town ...	4·33	Canning " ...	3·70

for the conveyance of sewage to, and the reclamation of the Lakes are still going on, and their evil results must have become more and more intensified year by year, and rendered Entally correspondingly more unhealthy; but the mortality in this ward has, according to the Vice-Chairman's showing, come down gradually from 3,664 deaths in 1877-78 (the year the above scheme commenced to 1,624 in 1884-85; thus showing that its health status has been improving. That the death-rate is yet high (amounting to 60·30 per 1,000 of population in 1884-85) is indicative of there being many inherent insanitary conditions in Entally requiring to be contended with before the Calcutta Corporation can be blamed. It is remarkable that while there was comparatively less Cholera in the Suburban Municipality, it prevailed with greater intensity in the Alipore Jail.

58. *Nuddea.*—There was a considerable reduction of mortality from Cholera in this district, *viz.*, of 1·54 per 1,000 of population, but the total death-rate, amounting to 4·25 per 1,000, is much higher than those of the other districts in the Presidency Division; and no less than 20* of its 31 circles exhibited high mortality. The disease passed on from the last to the present year, gradually increased through January and February,

	Ratio per mille.		Ratio per mille.
*Ranaghat thana ...	11·75	Nowpara thana ...	5·47
Hanskhali " ...	11·71	Bhadulia " ...	5·05
Nobodip town ...	10·49	Bhaluka " ...	4·65
Kushtea " ...	9·15	Kishnaghur town ...	4·36
Nekasipara thana ...	6·19	Chagdah thana ...	4·27
Tehatta " ...	6·13	Jibannagur " ...	4·16
Kissengunge " ...	5·74	Damurhuda " ...	4·01
Kushtea " ...	5·64	Santipore town ..	3·80
Kaligunge " ...	5·64	Kishnaghur thana ...	3·13
Santipore " ...	5·58	Chapra " ...	3·05

rose to epidemic intensity in March and April, began to subside in May when some heavy showers of rain fell, and dwindled to insignificance during the unusually heavy rainfall of June to September, but again became severe during November and December. The March outbreak of the disease in the Nobodip town occurred chiefly among the pilgrims who came to the shrines there. The insanitary conditions prevalent in this town were described in my Report for 1884, but latrines have since been provided to prevent the pilgrims defiling the chur between the river and the town. In the Kishnaghur town a severe outbreak occurred, commencing on the 26th March and lasting till the end of April, in a part of it called Ghurni, chiefly inhabited by Moochis and poor Mahomedans. It was observed that none of the other inmates, six in number, of the house in which the first case occurred were attacked, but that the disease passed on to the immediately neighbouring house. Kishnaghur is a very large straggling town which, it is said, is being gradually depopulated by the prevalence of sickness in it. It is badly sanitated, abounds in rank jungle and filthy swamps, has no proper drainage, and contains innumerable cess-pits and accumulations of rubbish. The water-supply, taken from three or four tanks which are preferentially resorted to although the river is not far off, is extremely bad—saturated with impurities—the tanks being ancient and ill kept. Foul wells are also used; but one pucca and ten kutcha wells were sunk at the time of this outbreak. The water of one well in Rajah's Chuck was analysed and found to be chemically very impure. The Magistrate, who visited this town several times, wonders how the inhabitants manage to survive the wet season year by year. The Chapra thana is surrounded by heavy jungle, and Hanskhalli has a reputation for unhealthiness. The mortality in these thanas, as well as in thanna Kishnaghur, is reported to have been enhanced by the deaths in them of pilgrims returning from Nobodip town on their way home. Dr. ffrench-Mullen, Deputy Sanitary Commissioner, Metropolitan Circles, states with reference to a severe outbreak of cholera which occurred in village Toonghi in thanna Kissengunge, the local sanitary condition of which was not very bad, that it was attributable to branches of trees having been steeped by fishermen, who are numerous in the place, in the bhil, in constructing "kamors" for the purpose of catching fish. The boughs decompose in time and the surrounding water becomes saturated with organic matter.

59. *Jessore.*—The mortality from Cholera in this district amounted to 2·69 per 1,000 of population, and the areas of greatest suffering were those noted in the margin. It was noticed that more than half the casualties of the year were recorded in the Bongong sub-division,

	Ratio per mille.		Ratio per mille.
* Bongong thana ...	13·30	Sarsha thana ...	4·40
* Garupota " ...	7·48	Kotechandpur " ...	4·33
* Gaighatta " ...	5·45	Harinakunda " ...	4·25
Jessore town ...	4·59	Salikha " ...	3·01

of which the thannas named in the margin distinguished by asterisks form parts. As usual, no account of the prevalence of Cholera in this district has been furnished by the local authorities. The observations of Dr. ffrench-Mullen in the Bongong thana lead him to think that villages situated on the banks of rivers are far more liable to outbreaks of Cholera than those far removed from them, and that villages overshadowed by bamboo jungle and in which the houses are crowded together, are, if the people at the same time use river water, the most liable of all to attacks of the disease independent of insanitary conditions and bad water-supply from other sources; and he asks whether the practice of placing "kamors," or collections of branches in the river at different points to attract fish, have any influence on the water of a large river. Though I disapprove of the kamors, I think the casting of cholera corpses in the rivers is likely to be a much more extensively operating cause.

60. *Khulna.*—Here the mortality stood at 2·09 per 1,000 of population, and only the Damuria and Paikgacha thanas and the Satkhira town returned exceptionally high casualty rates, *viz.*, 3·13, 3·12, and 2·40 per 1,000 of population. There is nothing of importance to relate regarding the Cholera of this district. Dr. Ghose, the Civil Surgeon, instanced some cases of the spread of the disease by human intercourse.

61. *Murshidabad.*—Cholera prevailed in this district with considerably abated activity. The death-rate, amounting to 2·04 per 1,000 of population, was lower by 2·95 per 1,000 compared with that of the preceding year. Nevertheless, in several of the circles the disease exhibited great fatality, *vide* marginal figures. No reasons have been furnished as to why these circles suffered so greatly.

	Ratio per mille.		*Ratio per mille.*
Berhampore town ...	6·56	Jungipore town ...	3·92
Gokurn thana ...	6·17	Kandi thana ...	3·85
City Murshidabad ...	5·35	Dewanserai „ ...	3·19
Raghunathgunge thana...	4·33	Manulla Bazar „ ...	3·03

62. The statistics of the Rajshahye Division of Bengal, given in the margin, indicate that larger areas were invaded by the disease in Dinajpur, Rungpore, Bogra and Julpaiguri, and smaller ones in Rajshahye, Pubna and Darjiling, and that the mortality was higher in all the districts excepting Pubna. The seasonal incidence of the disease varied, it will be seen, in each district; but on the whole, March to May and December were the months of severest prevalence. Generally, the greatest amount of rain fell during the months of May to September, but in Dinajpur and Rajshahye the monsoons set in one month later, and in Pubna and Darjiling the rains were prolonged into October.

Cholera prevalence in the Rajshahye Division.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per *mille.*	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Dinajpur ...	12·06	9·06 *I*	1·92	1·61 *I*	1·61 *I*	April to December.
Rajshahye ...	15·37	2·02 *D*	5·78	·83 *I*	3·55 *I*	March to August.
Rungpore ...	4·11	1·24 *I*	·88	·33 *I*	·15 *I*	April, May, November and December.
Bogra ...	15·71	7·65 *I*	4·21	2·31 *I*	3·25 *I*	March to May and December.
Pubna ...	11·56	4·36 *D*	1·96	1·40 *D*	·06 *I*	April to June, November and December.
Darjiling ...	·95	·21 *D*	·19	·02 *I*	·36 *D*	June.
Julpaiguri ...	5·78	8·18 *I*	·45	·10 *I*	·48 *D*	July.
Total ...	10·81	3·06 *I*	2·39	·54 *I*	1·25 *I*	March to May and December.

63. *Dinajpur.*—The immunity from Cholera which this district enjoyed in 1884 was not continued this year, for it lost 1·92 per 1,000 of its population against only ·31 per 1,000 in the preceding year; but the extremest severity of the disease appears to have been limited to only the five circles marginally named. The Cholera which prevailed in November and December 1884 passed over to this year, exhibiting enhanced mortality in January. In February and March it was present in a subdued form, but became active again in April, culminated in intensity in May, and lingered on with more or less severity to the end of the year. No account has been furnished with

	Ratio per mille.		*Ratio per mille.*
Porsha thana ...	11·11	Gungarampur thana	2·91
Parbutipur „ ...	4·01	Dinajpur town ...	2·70
Hatiram „ ...	3·49		

regard to the history of the disease in the areas above named in which it prevailed prominently, excepting that in the town of Dinajpur it occurred first among persons who had returned to their homes from the Kantanagur fair, 12 miles distant, and that it then attacked people living in their neighbourhood. The outbreak appears, however, to have subsided quickly, indicating that introduced Cholera does not spread in an epidemic form. Contrary to general experience in Bengal, the Magistrate thinks that the abnormal rainfall of the year caused the increase of Cholera in this district.

64. *Rajshahye.*—This district suffered very severely from Cholera, returning a mortality of 5·78 per 1,000 of population, which is the highest in the Rajshahye Division. The circles named in the margin exhibited the highest death-rates.

	Ratio per mille.		Ratio per mille.
Tannore thana ...	18·64	Beauleah thana ...	7·57
Bagmara ,, ...	13·31	Naugaon ,, ...	6·25
Godagari ,, ...	9·26	Mandah ,, ...	5·33
Putia ,, ...	7·94		

It was observed that, while the disease prevailed with more or less severity up to August throughout the district, April and May being the worst months, in the northern thannas of Singra, Panchupore, Naugaon and Mandah it was prolonged into the cold season; but that in the other thannas, which had been inundated by the Ganges in July, there was comparatively no Cholera during that season.

65. *Rungpore.*—This district enjoyed the same amount of freedom from Cholera as it did in the preceding year, the total mortality amounting to only ·88 per 1,000 of population, and only the Kowarganj, Dimla and Mitapukhar thannas presenting noticeable fatal results, *viz.*, at 2 44, 1·98, and 1·90 per 1,000 of population respectively. The Civil Surgeon, moreover, had reason to believe that a good many of the deaths reported as having been caused by Cholera were due to bowel-complaints. Of the three areas in which the disease prevailed with some severity, Dimla is intersected by the Railway. The Magistrate remarks that the November outbreak of Cholera occurred after the breaking up, in that month, of the Alowakawa fair in the neighbouring district of Dinajpur.

66. *Bogra.*—In this district the disease prevailed with great severity, and the mortality was considerably higher than in the preceding year, the death-rate amounting to 4·21 per 1,000 of population, and the increase over the rate of 1884 being so much as 2·31 per 1,000. The marginally-noted areas presented the highest mortality.

	Ratio per mille.		Ratio per mille.
Panchbibi thana ...	12·00	Shariakandi thana ...	3·41
Bogra ,, ...	4·39	Bogra town ...	3·39
Sherpur ,, ...	3·66	Adamdighi thana ...	3·10
Khetlal ,, ...	3 49		

The severity of the disease is said to have been checked by a fall of 12·05 inches of rain in June. The District Superintendent of Police reports that after enquiry he found that Cholera in the Sherpur thanna was attributable to excessive heat and to the people eating whatever food they could obtain at cheap prices, without reference to its wholesomeness, owing to deficiency of crops caused by drought, and that the mortality was enhanced by want of proper treatment of the attacked.

67. *Pubna.*—Here Cholera prevailed with considerably abated severity in comparison with its incidence in the preceding year. The total casualty rate amounted to 1·96 per 1,000 of population, the decrease in mortality being 1·40 per 1,000, and only the Raiganj (4·54 per 1,000), Mathura (3 20 per 1,000 , and Ullaparah (2·99 per 1,000) thannas and the Pubna town (2·22 per 1,000), presented death-rates calling for notice. The Magistrate says that the Cholera in this district was due to polluted and deficient water-supply, the former caused by the steeping of jute in it in October and November, and the latter by all the small tanks or other lodgments of water having dried up in April and May.

68. *Darjiling and Julpaiguri.*—Both these districts continued to enjoy the immunity from Cholera of the preceding year, the mortality being represented by only ·19 and ·45 per 1,000 of population, respectively. In Darjiling the disease was confined to the Darjiling, Kurseong and Phansidewa thanas, the Darjiling town and the Kalimpong rural area being entirely free from it; and in Julpaiguri somewhat high death-rates were returned by only the Keranti and Mynaguri thanas, *viz.*, at 2·03 and 1·05 per 1,000 of population, respectivly. An outbreak of the disease which occurred in Keranti in July, affected chiefly

the coolies in a tea-garden in Dam-dim and was confined to that garden. Contrary to the usual incidence of the disease in Bengal, Cholera prevails most severely in Julpaiguri during the height of the rains from July to September

69. The figures tabulated in the margin show that all the four districts in the Dacca Division of Bengal presented subdued prevalence and fatality of the disease in comparison with its incidence during the preceding year; that the mortality was not conspicuously high in any of them; that in seasonal fatality January, December, April and May took the lead generally; and that the winter severity of the disease was confined to December, excepting that in Mymensing it commenced one month earlier. The largest amount of rainfall occurred during May to September, but the rains were prolonged into October in all the districts.

Cholera prevalence in the Dacca Division.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per *mille*.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Dacca	15·92	10·81 *D*	1·52	2·33 *D*	·48 *D*	January, April, May and December.
Faridpur ...	14·99	14·54 *D*	2·15	3·19 *D*	·17 *D*	January to May and December.
Backerganj ...	26·68	7·77 *D*	2·09	2·54 *D*	·48 *D*	January to June.
Mymensing ...	8·00	5·31 *D*	1·75	·33 *D*	·59 *I*	January, April, May, November and December.
Total ...	13·[illegible]9	9·66 *D*	1·84	1·84 *D*	·05 *D*	January, April, May and December.

70. *Dacca.*—After some years of more or less severe prevalence of the disease, this district enjoyed during the year under notice much freedom from it, the mortality extending to only 1·52 per 1,000 of its population, against 3·85 per 1,000 in 1884 and 2 per 1,000 during the lustrum 1880-84, and only the Naraingani and Dacca towns and the Nowabganj and Moonshiganj thanas presented high mortality, the casualty rates in them being 5·01, 2·12, 2·55 and 2·41 per 1,000 of population respectively. The high mortality in the Dacca town is again referred to the non-extension of filtered water to the whole of it, necessitating the use, by the greater portion of its population, of impure water, one or more filthy wells existing in every compound. I should add to this cause the highly insanitary conditions which yet obtain in this town. It has been recorded in former reports that in years of low floods it is not unusual for cholera to be severe in September and October and even in July and August, and this opinion seems to receive confirmation by the events of this year, for the inundations being unusually severe, the usual second outbreak of the disease was curtailed in duration, for it was postponed and limited to December.

71. *Faridpur.*—The mortality from Cholera in this district amounted to 2·15 per 1,000 of population, which is less by so much as 3·19 per 1,000 in comparison with the death-rate of 1884. Only four of its 14 circles exhibited noticeably high casualty rates, *viz.*, those marginally named.

	Ratio per mille.		Ratio per mille.
Awanpur thana ...	4·27	Goalundo thana ...	3·11
Muksudpur „ ...	3·36	Gopalganj „ ...	3·07

Nothing of importance has been submitted by the local authorities in connection with the prevalence of the disease in this district.

72. *Backergunge.*—In this district also the prevalence of Cholera had abated very considerably and the mortality was not excessive. The latter amounted to 2·09 per 1,000 of population against 4·63 per 1,000 in the preceding year, and only the four circles indicated in the margin suffered to a noticeable extent.

	Ratio per mille.
Gulisakhali thanna ...	5·45
Putuakhalli „ ...	3·93
Barisal town ...	3·79
Golachipa thanna ...	3·43

During an outbreak of the disease which occurred in the Barisal town in March, the Civil Surgeon personally ascertained that the sanitary condition of the part of it which had been affected, called Amanutganj, situated to the north and divided from the south and most healthy portion of the town by a khal or tidal nullah, was very bad. A great portion of it was covered by jungle, and a large number of more or less deep pits existed, several of them containing stagnant water and uncovered night-soil deposited by the municipal mehters. The stench from these pits was sickening. The town of Jhalokati is reported to have, as in the last year, suffered very severely from cholera, nearly one-half

of its total mortality having been caused by the disease. Its sanitary condition under every head "is the worst in the district."

73. *Mymensing.*—There was less Cholera in this district than in 1884. The mortality stood at the low rate of 1·75 per 1,000 of population and only the four circles noted in the margin returned high death-rates. The disease appears to have passed over from the past to the year under review and to have exhibited great severity in June and again in December.

		Ratio per mille.
Jamalpur town	..	4·22
Kishoreganj "	...	4·18
Dewanganj thana	...	3·39
Pingua "	...	2·92

74. The figures of the Chittagong Division denote that the death-rate from Cholera in it was the lowest in comparison with all the other divisions in Bengal; that all its three districts suffered at low rates, only Chittagong exhibiting enhanced fatal results, but to a small extent; and that January to May and December were generally the months of greatest prevalence of the disease. The monsoons commenced in these districts in May and ended in September, but the rains were prolonged into October in Noakhali and Tipperah and into November in Chittagong.

Cholera prevalence in the Chittagong Division.

Districts	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with 1880-84.	Months of greatest prevalence.
Chittagong ...	10·06	4·03 *I*	1·58	·49 *I*	6.0 *I*	January to July.
Noakhali ..	9·71	3·80 *D*	1·43	·24 *D*	·92 *I*	January to May and December.
Tipperah ...	10·64	1·03 *D*	1·77	·23 *D*	·52 *I*	Ditto ditto.
Total ...	11·53	1·03 *D*	1·63	Equal	·64 *I*	January to May and December.

75. *Chittagong.*—The mortality from Cholera in Chittagong stood at the low rate of 1·58 per 1,000 of population, but the Civil Surgeon is of opinion that this ratio does not represent the entire mortality which actually occurred, as the year was not only in Chittagong, which has a bad reputation, but in most parts of India, very unhealthy. In support of this opinion he writes:—"I have never treated so many Europeans from this disease as I unfortunately have had to do during July and August, and I had cases varying from the most malignant Asiatic Cholera killing in a few hours, down to the simplest and mildest forms of the disease. The circumstances of the individuals attacked were so various, differing in habits, manners, temperament, diet and general surroundings, that I am quite unable to formulate any theory respecting it." Marginally are exhibited the areas of greatest suffering. The severity of the disease in the Chittagong town is ascribed to the very grave insanitary conditions which obtain in it. The town is "simply a forest in deltaic soil, with villages interspersed throughout its whole extent, cut up by streams from the springs, tidal creeks and innumerable tanks and excavations." The condition of this town has long engaged the attention of this office, but, notwithstanding the monetary assistance given by Government, the Commissioners appear to be in a chronic state of inability to effect much good in it.

		Ratio per mille.
Chakuria thanna		8·83
Chittagong town	.	6·82
Maskal "		4·52
Banskhalli thanna		2·49
Cox's Bazar "	...	2·18

76. *Noakhali and Tipperah.*—Both these districts appear, on the whole, to have suffered very mildly from Cholera, the mortality in them being represented by only 1·43 and 1·77 per 1,000 of population, respectively. Excepting the Chagulnya thana (4·78 per 1,000) in Noakhali, and the Daudkandi thana (3·35 per 1,000) in Tipperah, no other circle presented a high death-rate. It is stated, with reference to the presence of the disease in Chagulnya, that it was imported into it from Tipperah by men who went there to cut grass. In a few villages in thanna Muradnagar in Tipperah, the disease prevailed epidemically and 83 deaths occurred in one single day in December in four of the villages.

BEHAR.

77. The returns of the Behar Division of the Province show that of its population estimated at 23,127,104, 65,663 died from Cholera in 11·66 per cent. of its villages, the proportionate death-rate to population being 2·83 per 1,000. The casualty

Cholera prevalence in the Behar Division of the Province.

rate during the preceding year was ·76 per 1,000 in 4·83 per cent. of the villages, and in the quinquennium 1880-84, 1·29 per 1,000. There was thus a considerable increase both in the extension and fatality of the disease in comparison with the outcomes of both the periods above mentioned. The months of highest suffering which in Behar are usually from May to August, were this year prolonged to November.

78. The statistical information relating to Cholera in the Bhagulpore Division, presented in the margin, indicates that there occurred considerable increase both in the prevalence and fatality of the disease in all the five districts which comprise it, notably in Maldah, in comparison with the outcomes of the preceding year and of the lustrum 1880-84; and that in seasonal fatality, with some variations in commencement, July to November were the worst months, excepting in Purneah and Maldah. In the former the disease did not become severe till September and continued to maintain this tendency up to December, and in the latter there was an abatement of severity in August and September, but the winter epidemic was prolonged to December. June to September were generally the months in which the largest amount of rain fell, excepting that in Monghyr the monsoon set in a month later.

Cholera prevalence in Bhagulpore (*East Behar*) Division.

DISTRICTS.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per *mille*.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Monghyr ...	17·40	9·39 *I*	3·06	2·36 *I*	2·15 *I*	June to November.
Bhagulpore ..	19·48	8·58 *I*	3·41	2·60 *I*	2·32 *I*	July to November.
Purneah .	9·30	7·77 *I*	1·57	1·35 *I*	·38 *I*	September to December.
Maldah ...	22·68	15·00 *I*	6·17	4·55 *I*	4·99 *I*	March to July and October to December.
Sonthal Pergunnahs.	13·41	8·11 *I*	3·30	1·57 *I*	2·63 *I*	May to November.
Total ...	15·37	9·16 *I*	3·12	2·22 *I*	2·12 *I*	May to November.

79. *Monghyr.*—Although Cholera did not prevail very extensively in this district, the mortality was high. It amounted to 3·06 per 1,000 of population, and exceeded the death-rate of 1884 by 2·36 per 1,000. The disease proved most fatal in the marginally noted circles. From a report from the District Superintendent of Police, it appeared that the high mortality in thanas Jamalpore, Shaikpura, Sekundra, Jamui and Monghyr was referable to excessive heat and to the poor people, among whom it principally occurred, being compelled to subsist on articles not easily digestible, such as jack and other fruit, owing to heavy prices for food-grains.

	Ratio per mille.		*Ratio per mille.*
Jamalpore town ...	19·61	Sekundra thana ...	5·34
Jamalpore thana ...	11·18	Jamui " ..	4·36
Kharakpore " ...	8·24	Monghyr " ...	3·34
Monghyr town ...	6·24	Chakai " ...	3·22
Shaikpura " ...	6·07		

80. *Bhagulpore.*—In this district over 19 per cent. of the villages was overrun by the disease, and the mortality was high, amounting to 3·41 per 1,000 of population, and exceeding that of 1884 by 2·60 per 1,000. The circles marginally noted furnished the highest death-rates. Thanas Banka, Amarpore and Katoria are reported to have suffered epidemically in July and August, when 1,422 persons were attacked and 1,213 died. The disease is supposed to have been imported into these thanas by travellers from Deoghur and from a village in Monghyr bordering on the north-west of thana Amarpore. It is also mentioned that the inundations which prevailed during the rainy season, specially in the north of the district, favoured the prevalence of Cholera. Thanas Pertabgunge and Bongong are situated in the north. The former returned a death-rate of only 1·27 per 1,000 of population, and the latter stands sixth on the above list of circles which suffered most, with a death-rate amounting to 2·96 per 1,000.

	Ratio per mille.		*Ratio per mille.*
Banka thana ...	8·74	Bongong thana ...	2·96
Kumerganj " ...	6·96	Supol " ...	2·93
Bhagulpore town ...	5·13	Katoria " ...	2·29
Mudehpura thana ...	4·25	Kissengunge " ...	2·23
Amarpore " ...	3·43	Colgong " ...	2·23

81. *Purneah.*—This district did not enjoy this year the immunity from Cholera which it experienced during the preceding year; but, although the mortality was higher by 1·35 per 1,000 of population, it was not excessive, as it

	Ratio per mille.
Kusba Amour thana ...	4·82
Balarampore „ ...	3·82
Ranigunge „ ...	3·22
Dhamdaha „ ...	2·88
Arareah „ ...	2·03

amounted to only 1·57 per 1,000, and in only the five circles named in the margin the casualty rates were noticeably high. It was observed that Arareah thana, which was not influenced by the inundation being high and dry, suffered much from Cholera, but that the low lands to the south and south-east, comprising thanas Manihari, Gundwara, Kadwa and Balarampore, which were extensively flooded by the Ganges in August and September, had the fewest number of cases. An examination of the statistics supports this statement to a great extent, for while Arareah returned a death-rate of 2·03 per 1,000 of population, in the other thanas, with the exception of Balarampore which occupies the second place in the above list of high-suffering areas, the casualty rates stood at only ·16, ·73, and 1·25 per 1,000 of population, respectively. From enquiries made by Dr. Wood, the Deputy Sanitary Commissioner, Darjiling circle, it appeared that the presence of the disease in this district was supposed to be due to importation, viz., into the Arareah and Ranigunge thannas from Durbhanga across the Kosi river, where Cholera was present at a fair; into the Damdaha thanna from beyond the Kosi from Bhagulpore; and into thanna Balarampore from Maldah in the south. Dr. Wood found most of the villages visited by him to be, in a sanitary point of view, worse than an average busti, with filthy surroundings consisting of middens, of accumulations of decomposing cattle ordure and refuse, of pits full of stagnant water, of ground saturated with the liquid excreta of cattle and human beings, and of house refuse water oozing through the fences and making the pathways filthy, or soaking into the ground within the house enclosures; no conservancy or drainage arrangements; the water-supply contaminated in most cases, &c. He also mentions that the dead thrown into streams were numerous, and he apprehends that the next spring epidemic visitation of the disease will be on a larger scale. It was noticed by the Civil Surgeon that the disease in its severe form appeared in October—an unusual time for this district.

82. *Maldah.*—This district suffered very severely from Cholera, considerably more so than during the preceding year—in fact it stands second on the list of cholera-stricken districts. The disease was present in over 23 per cent. of the villages, and 6·17 per 1,000 of the population fell victims to it, against only 1·62 per 1,000 in 1884, and all the circles in the district returned exceptionally high mortality, *vide* marginal figures. The disease appeared in March, became active in April, attained maximum severity in May, declined through June to September, and then increased; but the winter severity was, it is said, not so great this year as is usually the case in Maldah, and this is attributed to the inundation, which submerged the entire district, excepting its northern frontier. The Deputy Sanitary Commissioner, Darjiling circle, also notes that inundations and fires were the chief cleansing agencies in the villages in Maldah. The statistics, however, do not quite support this view of the matter, for, while they indeed show that the greatest suffering occurred during April, May and June with death-rates of 1·28, 1·80, and ·76 per 1,000 of population per mensem, and that in October, November and December they stood lower, viz., at ·34, ·28 and ·25 per 1,000, the figures of the same months in 1884, during which the inundations were low, were ·01, ·05, and ·32 per 1,000 respectively. The Civil Medical Officer says that Cholera is intimately connected with bad drinking-water. This year the drinking supply was very bad, owing to the diminished rainfall of the previous two years having caused the tanks and water reservoirs to run very low, and the bhils and rivers had become foul from decomposing vegetation and organic matters. The prolonged drought, greater heat, general insanitary conditions of the villages and the careless manner in which the people dispose of Cholera excreta, intensified the severity of the disease. Moreover, it is a common practice to burn dead bodies on the banks of the bhils and old river courses, the water of which is used for drinking purposes. It appears that the Magistrate took energetic steps personally and through the chowkidars, to

	Ratio per mille.		Ratio per mille.
Gajol thana ...	16·86	Kharba thana ...	4·56
Maldah „ ...	13·24	English Bazar „ ...	4·06
English Bazar town	10·13	Ratna „ ...	4·03
Gumashtapore thana	7·82	Nawabgunge „ ...	3·29
Shibganj „ ...	6·69	Kaliachuck „ ...	2·30

stop this practice, and that his endeavours were attended with considerable improvement. It was also noticed that the middle classes of the people who improved their water derived from ponds and bhils by putting alum into it, or allowing it to subside before drinking it, suffered from Cholera in lesser numbers than the poorer classes who used the same water in its original condition. The Magistrate also states that in Gajol in the north-east and in the greater part of Old Maldah, which are the most unhealthy places in the district, and where Cholera prevailed severely, the people generally drink the foul water of the bhils and of old tanks half filled with jungle and often covered with weeds. He addressed letters to the landholders to improve their tanks without avail, most of the replies given being of an evasive character.

83. *Sonthal Pergunnahs.*—This district lost 3·30 per 1,000 of its population from Cholera, and this death-rate exceeded that of the preceding year by 1·57 per 1,000. All the circles in it presented noticeably high mortality, as the figures in the margin denote. In the town of Deoghur the pilgrims who came to the temples at Boydanath as well as the residents suffered. Active sanitary measures were adopted, which resulted in arresting the progress of the disease. In the Godda sub-division Cholera prevailed with considerably greater severity, the mortality being represented by 2,083 deaths against 390 in 1884. It invaded 1,611 villages, and its activity was greatest from June to August, maximum intensity being attained in August. There was some increase of the disease in the sub-division of Deoghur, including Jamtara, the casualties numbering 1,240 against 1,000 in 1884. In the Pakour sub-division 712 persons were attacked in 112 villages, but the mortality was lower, the deaths numbering 485 against 659. In the sub-division of Rajmehal the disease attacked 44 villages and caused 593 deaths. In the sub-division of Dumka the disease prevailed very severely and was present throughout the year. One hundred and thirty-one villages were affected, 882 persons were attacked, and 783 died. The reports show that when Cholera was prevailing epidemically in the villages adjoining the Dumka and Sahebgunge towns, steps were taken to keep the towns and dwelling-houses clean, to prohibit the use of bad food and water, to have the Cholera ejecta disposed of properly and safely, to burn sulphur, &c., and that with these precautions, supplemented by copious rainfall, the disease disappeared from the former town after causing only six deaths, and did not attack the latter.

	Ratio per mille.		*Ratio per mille.*
Deoghur town ...	11·11	Pakour thana ...	2·36
Godda thana ..	5·97	Rajmehal „ ...	2·33
Deoghur „ ...	2·95	Dumka „ ...	2·15

84. In the Patna or Western division of Behar, Mozufferpore experienced the greatest suffering from Cholera, Patna the least, and the rest of the districts intermediately; and all the districts, excepting Patna, exhibited enhancement in both the extension and fatality of the disease in comparison with the results of both the preceding year and the lustrum 1880-84, Gya showing diminution contrasted with the last-named period. The months of severest prevalence varied somewhat in the districts individually considered, but on the whole June to November may be said to have been the worst months. The monsoon commenced in June and ended in September in all the districts, excepting Patna and Sarun, where it appeared one month earlier.

Cholera prevalence in the Patna (*West Behar*) Division.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Patna ..	8·09	3·44 *D*	1·03	·99 *D*	·43 *D*	April, May, July, August and September.
Gya ...	5·43	·99 *I*	1·39	·44 *I*	·25 *D*	June to September.
Shahabad ...	7·15	2·62 *I*	2·24	1·34 *I*	·66 *I*	May to November.
Mozufferpore ...	20·16	19·25 *I*	4·82	4·70 *I*	2·09 *I*	June to November.
Durbhanga ...	8·02	6·42 *I*	2·78	2·50 *I*	1·61 *I*	Ditto ditto.
Sarun ...	11·42	6·68 *I*	1·99	1·41 *I*	1·21 *I*	July to October.
Chumparun ...	7·88	6·89 *I*	3·99	3·62 *I*	2·27 *I*	August to November.
Total ...	9·37	5·38 *I*	2·68	1·99 *I*	1·24 *I*	June to November.

85. *Patna.*—This district returned, on the whole, a very low death-rate from Cholera, *viz.*, 1·03 per 1,000 of its population. Nevertheless, in some of its circles the suffering was great, *vide* marginal figures. No deaths were reported from the Attaserai thana in the sub-division of Behar in the south. The local reports do not furnish any account of the history of the

	Ratio per mille.
Behar town	3·55
Dinapore „	2·31
Patna thana	2·29
Maner „	2·12
Barh town	2·11

disease, excepting that in the Behar town it prevailed epidemically during July and August

86. *Gya.*—Although the mortality was not, on the whole, high, this district did not enjoy the immunity from Cholera this year which it did during the preceding year. The death-rate stood at 1·39 per 1,000 of population against 95 per 1,000, and the areas of greatest suffering were the Gya town (6 66 per 1,000) and the Nowada and Arwal thanas (2·66 and 1·98 per 1,000 respectively). It was noticed that 101 deaths occurred among the pilgrims who passed through this district. No other point of interest is contained in the local reports.

87. *Shahabad.*—Here also there was an accession of mortality to the extent of 1·34 per 1,000 of population, but the total death-rate, amounting to 2·24 per 1,000, was not excessive. The circles named in the margin furnished the highest death-rates. There was no Cholera in the jail although it existed in the town. Contrary to the experience of former years when the disease prevailed most severely from May to August, this year its virulence was exhibited during the months of August to October, being worst in the last-named month.

	Ratio per mille.
Mohania thana	5·81
Dumraon town	5·21
Arrah „	4·44
Buxar thana	3·70

88. *Mozufferpore.*—Cholera prevailed in this district much more extensively and fatally than during the preceding year, and the mortality here was much greater than in any other district in the Patna Division. The total death-rate was 4·82 against only ·12 per 1,000 of population, and over 20 per cent. of the villages was pervaded by the disease. All the circles, excepting the Hajipore and Mahua thanas and the Lalgunge town, returned noticeably high death-rates, *vide* marginal figures It was in May, when the rains set in, that cases of Cholera became more frequent and severe, and as the rainy season advanced the disease became established nearly all over the district. It did not, however, prevail epidemically, and the Civil Surgeon had reason to believe that more deaths from Cholera had been reported than had actually occurred. An instance in point is that when the Police reported that Cholera had broken out in a virulent form in mohullah Chandwarah in the town of Mozufferpore, two hundred houses were inspected and only five cases of the disease were seen, but fever associated with diarrhœa was much more prevalent. The Civil Surgeon states that a wave of Cholera has certainly passed over North Behar, and that if there is any truth in the theory so earnestly advocated by the late Dr. Bryden, a severe outbreak may be anticipated during the coming year.

	Ratio per mille.		Ratio per mille.
Sitamurhi town ...	27·91	Mozufferpore town ...	6·41
Shewhur thana ..	11·99	Katra thana	4·88
Poopree „ ...	8·45	Lalgunge „	3·76
Sitamurhi „ ...	7·12	Hajipore town ...	3·23
Paru „ ...	6·65	Mozufferpore thana ...	2·66

89. *Durbhanga.*—In this district also there was a considerable increase of Cholera prevalence after it had enjoyed much immunity from it in 1884. The total mortality was returned at 2·78 against only ·28 per 1,000 of population, and the circles of intensest suffering were those indicated in the margin. In seasonal incidence of the disease there was a difference this year. Instead of prevailing with severity during the dry hot months of April and May, its virulence was greatest during June to September in the face of a heavy rainfall, which usually checks the progress of the disease in Lower Bengal; and although the September rainfall amounted to 24·74 inches, the disease went on increasing until October, in which month it reached maximum intensity. Thanas Rosera, Tajpore and Dulsingserai were almost free from the disease, and it was altogether absent from the jail, although it prevailed with marked severity in the town of Durbhanga. The Civil Surgeon observes that the spread of Cholera is in proportion to the insanitary condition of the infected area, and the Magistrate, agreeing with him, furnishes the following lamentable account of the villages in Durbhanga. He says that these villages are in marked contrast with the majority of those in Eastern or Central Bengal. In the Durbhanga villages one meets constantly with the most disgusting and revolting sights, and is always overpowered with the most abominable smells. The sides and centres of the roads are strewn with human ordure. It would

	Ratio per mille.		Ratio per mille.
Durbhanga town ...	8·32	Durbhanga thana ...	3.36
Phulparas thana ...	7·21	Khajowli „ ...	2·79
Madhubuni „ ...	4·59	Bahera „ ...	2·64
Benipatti „ ...	3·88		

appear that all classes, without exception, had by common consent agreed to use the main street as the principal latrine of the village, the consequence being that night and day a deadly fœcal odour pervades the whole atmosphere, and it is a fearful ordeal in the morning to thread one's way in safety through the uncleanliness and filth with the village pigs brushing against the legs in their haste to devour the noisome repast. He believes that the entire soil of the villages must be saturated with the filth of ages, and wonders how human life in Durbhanga is not always subjected to the ravages of disease. The villages in the Sudder and Madhubuni sub-divisions, being on a lower level than those in the Tajpore sub-division, are perhaps more unhealthy than the latter.

90. *Sarun.*—The mortality from Cholera in this district, although not excessive on the whole, was much greater than in the preceding year. It stood at 1·99 against ·58 per 1,000 of population, and 11·42 per cent. of the villages was overrun by the disease. The numbers of cases and deaths reported by the Police from the commencement of the malady in its severe form in August to the time when it practically terminated in the end of October, are given in the margin, and below them are noted the circles which contributed most largely to the mortality of the year.

	Cases.	Deaths.
Chupra town	1,104	415
Revilgunge " ...	207	83
Sewan "	285	95
Total ...	1,596	593
District	4,788	2,863
GRAND TOTAL ...	6,384	3,456

	Ratio per mille.		*Ratio per mille.*
Sewan town ...	8·19	Darwali thana ...	2·19
Revilgunge " ...	7·12	Chupra " ..	2·17
Chupra " ...	6·96	Manjhi " ...	1·95
Gopalgunge thana ...	4·06	Baragaon " ...	1·91

Existing in sporadic form prior to June, the disease became severe in that month, and in August and September assumed epidemic type, when it caused much loss of life generally. It was not confined to any special locality, but was spread over the whole district, proving more fatal in some places than in others; but a peculiar feature of the disease was that, though not pursuing any definite course, it clung persistently to the places it had attacked, breaking out again in them after its apparent disappearance. It began to decline in severity by the middle of October, and almost entirely disappeared by the end of that month. It broke out virulently in some of the villages in the Maharam, Pursah, Busuntpore and Buragaon police-stations, but it ran its course quickly in these places and disappeared before assistance could be rendered. No account, excepting from Chupra town, has been furnished of the Cholera prevalence in the places marginally cited above, although it was notably fatal in the towns of Revilgunge and Sewan. In the Chupra town the disease made its appearance in a virulent form in the middle of August and disappeared after October, causing the greatest loss of life in the first-named month. There is no doubt that the extremely insanitary condition of the town enhanced the severity of the disease. Every endeavour was made to arrest its spread. The drains were cleaned and drained of stagnant water; sulphur and other disinfectants were freely used; dead bodies were properly buried or thoroughly cremated; the drinking wells were carefully protected from pollution; care was taken to afford early treatment to the sick; a set of rules, designed to check the spread of the disease, framed by the Civil Surgeon, was circulated through the agency of the Police, &c. These efforts to check the disease proved, it is said, successful in so far that the number of deaths commenced to diminish daily, but the disease itself lingered on. The case of Chupra furnishes a vivid illustration of the evils of neglected sanitation. The efforts made to check the progress of the disease cost much money, which, instead of being spent in this emergency, could have been much better employed in carrying out permanent sanitary improvements, and thus guarding the town from the visitation of the disease. It required 16 gangs of coolies of 12 men each to clean out the drains, and 50 chowkidars, each paid at two annas a day, to guard the water-supply. There are 37 permanent mehters, and yet the drains were allowed to run into such a state of uncleanliness as to require the enlistment of a large staff of extra coolies to put them into order—in fact, the town has a large conservancy establishment, but the Commissioners get very little work for their money. A remarkable contrast proving the efficacy of sanitary precautions, is the jail.

This institution was free from the disease when it was prevailing in the town, as special care was bestowed in guarding against its invasion. The pains taken in this direction reflects great credit on Dr. Russell, but tells seriously on the management of the Municipality. One of the chief evils in Chupra is its defective drainage. The town is a straggling one covering a large area; and lying in a valley and being below the level of the river in high floods, the introduction of a good and perfect drainage system into it, is, it is said, difficult, except at prohibitive cost. The Magistrate thinks that my suggestion to provide a system of saucer drains would be quite insufficient to carry off the rain water even if there was anywhere to carry it to, while deep pucca drains are beyond the means of the Municipality. He questions whether the substitution of pucca drains for the kutcha ones would benefit public health, and believes that all that is necessary is to thoroughly clean out all the drains once a year at the end of the hot weather and before the rains come in, and to remove all accumulations of silt and obstructions—and he proposes to employ the surplus funds in other directions, such as providing proper burning ghats and slaughter-houses and strengthening the conservancy establishment. I dissent from this view of the matter. Pucca drains would enable house sewage to get out of the town at all seasons, which it does not do at present, and would facilitate quick discharge of heavy falls of rain, and thus prevent dampness. The cleansing of drains once a year is habitual in Behar, and leads to the accumulation of house sewage, &c., throughout the whole dry season when all drains become interrupted cess-pools. It is as cheap to keep the drains always clean as to clean them out after they are choked. The burning ghats being situated at a distance from the town, their condition does not materially affect its health.

91. *Chumparun.*—This is another district in the Patna Division which did not enjoy the immunity from Cholera which it experienced during the preceding year. Although the disease was present in only 7·88 per cent. of the villages, it caused the heavy mortality of 3·99 per 1,000 of population, the excess in comparison with the death-rate of 1884 being so much as 3·62 per 1,000. Every circle in the district presented high death-rates, *vide* figures in the margin. It appeared in thana Baguha in the last week of April, and immediately after in other parts of the district far apart from each other. From May, thana after thana was involved, and increasing in fatality it spread over the whole district in August. In September it reached maximum intensity and was most fatal. Continuing severe in October, it rapidly declined in November and December. From July when the disease began to assume serious form, till the first week of November after which it almost left the district, there occurred, according to the Police reports, 8,002 cases attended with 5,881 deaths. The rainfall was much larger in quantity than in the preceding year, particularly in July, August and September, and the rivers rose and a much larger portion of country than usual was inundated. The Civil Surgeon observes that there is a connection between excessive rainfall and Cholera prevalence, as disease prevailed with greatest virulence during August, September and October, when the rains were at their height, but as the country dried up, the disease subsided rapidly. The sub divisional officer of Bettiah says that the Cholera which prevailed in the Bettiah town was prevented from assuming an epidemic form by the sanitary precautions which were taken, and by the fires which occurred having cleansed it of impurities; but it has been shown above that this town returned the highest death-rate. Under the orders of Government I specially visited this town to enquire into its health status. I found its drainage very bad, and that the preparation of any adequate scheme for its proper treatment was beyond the means of the Municipality. I therefore suggested that Government should spare an Engineer to survey the town and prepare a drainage scheme, and that the local wealthy zemindars and others be asked to render assistance in carrying it out.

	Ratio per mille.		*Ratio per mille.*
Bettiah town ...	8·65	Motihari thana...	3·34
Adapore thana ...	7·37	Govindgunge " ...	3·30
Baguha " ...	5·96	Madhubani " ...	2·82
Dhaka " ...	5·31	Kesariya " ...	2·29
Lowria " ...	4·85	Bettiah " ...	2·01

The Civil Surgeon notes that it was very fortunate that the Cholera epidemic did not declare itself in the Motihari town until the cultivators, who had come for their opium weighments, had left it, otherwise the consequences would hardly have failed to be particularly disastrous. The five wells around the opium godowns were in a bad state of repair, and they were all, with one exception, drawn dry by midday. The excepted well was situated under trees, and its water looked unpleasant and was certainly filthy. This deficient supply of impure water was used by over 4,000 people who visit the town during the opium weighments. The Magistrate reports that a special reference will be made to the Commissioner of the Division regarding the improvement of the water-supply. Under Government orders I specially visited not only this district, but also Patna, Gya, Mozufferpore, Durbhunga, Sarun and Hazaribagh, to enquire into the sanitary arrangements which obtained at the places in which cultivators assemble for the weighment of opium. I found that some sanitary precautions had been taken, and that the danger of outbreaks of epidemic disease at these assemblies was recognized by the Opium Department Officers; but that the measures adopted by them were in the majority of cases defective and not commensurate with the actual needs of the places. I, therefore, made the following recommendations in view of proper sanitary precautions being observed:—

(1) That it should be incumbent on the Officers of the department to provide a good and sufficient water-supply, and that this, as a rule, can only be done by digging wells so deep as to ensure their yielding an ample supply during the hot and dry season.

(2) That in addition to groves of trees (if they exist) for shade and shelter, it would be advisable to provide for protection from storms a number of small huts which should be well apart and must not accommodate a large number of persons.

(3) That there should be a small staff of mehters to provide for the general cleansing of the camps, to dig trench latrines and erect mats round them; that these latrines should be situated in open cultivated fields, and not less than 150 yards from the encampment; and that the mehters should be in constant attendance, morning and evening, to cover up the night-soil and prevent the latrines being offensive.

(4) That as many cultivators will be averse to the use of latrines, a limit within which they may not ease themselves should be fixed around the camp, indicated by posts of bamboo or wood.

(5) That in case of epidemic disease appearing, the weighments should be pushed on rapidly and the cultivators allowed to return to their homes as soon as possible; that fires should also be burned throughout the encampment with sulphur thrown in at frequent intervals; and that the sources of drinking water should also be changed, and the cultivators encouraged to boil water before drinking it.

(6) That where there are not ample food supplies, bunniahs should be encouraged to open shops.

(7) That the expenses of all the above arrangements should be borne by the Opium Department, who should also subsidize local dispensaries to enable all comers to obtain an early and suitable supply of medicines.

(8) That all weighments should be made as early in the season as possible, specially in the Hazaribagh district, where epidemic cholera appears earlier than in the districts of Behar.

ORISSA.

Cholera prevalence in the Orissa Division.

92. The statistics bearing on Cholera in the Orissa Division of the Province show that 19,140 persons fell victims to the disease among its population numbering 3,628,832 in 23·21 per cent. of its villages, the proportionate casualty-rate to population being 5·27 per 1,000. The figures of the preceding year and of the quinquennium 1880-84 were—deaths 17,983 and 11,958, and death-rates 4·95

and 3·29 per 1,000, respectively. This comparison indicates that the disease prevailed with enhanced severity, but that the increment was not, on the whole, considerable. This Division suffered at a higher rate than the three others in the Province.

93. In the margin are tabulated the Cholera statistics of the three districts which compose the Orissa Division. They indicate that two of them, Cuttack and Puri, suffered very severely from the disease, and that the mortality returned by them was much higher than during both the preceding year and quinquennium 1880-84; and that in the third district, Balasore, while the death rate was still noticeably high, it had diminished very considerably in comparison with that of 1884, and in a small proportion as contrasted with that of the preceding lustrum. The seasonal severity of the disease differed this year. In former years January, February, March and August were comparatively healthy months and June the month of culminating severity. This year the four healthy months formed the period of much suffering, and the worst months were November in Cuttack, February and July, at an equal ratio, in Puri, and April, November and December, also in equal degree, in Balasore. The greatest amount of rain fell during July to August in Cuttack and during July to September in Puri and Balasore In Cuttack and Puri the rains were prolonged into October.

Cholera prevalence in the Districts in Orissa.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Cuttack ...	28·20	5·54 *I*	5·74	1·58 *I*	2·84 *I*	February, March, August, November and December.
Puri ...	25·33	11·63 *I*	5·98	2·46 *I*	3·16 *I*	January to March, July and August, November and December.
Balasore ...	14·57	9·48 *D*	3·71	4·08 *D*	·76 *D*	March to July, November and December.
Total ...	23·21	2·35 *I*	5·27	·32 *I*	1·98 *I*	February, March, November and December.

94. *Cuttack.*—In this district Cholera invaded over 28 per cent. of the villages and caused the high mortality of 5·74 per 1,000 of population. The rates at which the different circles in it suffered are indicated in the margin. The severe cyclonic storm-wave, which occurred on the 22nd September, and particulars regarding which have been furnished in paragraph 38 of this Report, is said to have considerably enhanced the mortality in this district. This calamity is reported to have affected chiefly thanas Aul, Patamundi, Kendrapara, Jajpore and Dharmsala. Of these thanas Dharmsala, Aul and Jajpore appear to have suffered very much, for they furnished the highest mortality; not so Patamundi and Kendrapara, as will be seen from the above marginal figures. But, as the chief suffering is reported to have occurred after the cyclone, it is necessary to see from the monthly death rates in these thanas whether the above fact can be established. These monthly figures are given in the margin. They indicate that there was certainly a rise in mortality in all the five thanas, particularly in Aul and Jajpore, and chiefly in November; but Dharmsala appears to have also suffered much during March, April and May, due no doubt to other influences. The causes in association with the cyclonic storm-wave which brought about the high suffering in these and the other thanas which were affected by it, briefly stated were: exposure and hardship for want of shelter; want of, or consumption of bad food, the food

	Ratio per mille.		*Ratio per mille.*
Dharmsala thana ..	10·94	Cuttack thana ...	4·62
Aul " ...	10·71	Salepur " ...	4·58
Jajpore town ...	8·27	Banki " ...	3·67
Do thana ...	6·33	Patamundi " ...	2·68
Jagatsingpur " ...	5·31	Kendrapara town ...	2·16
Cuttack town ...	5·18	Do. thana ...	2·04
Tirtol thana ...	4·73		

Months.	Ratio per mille.					Months.	Ratio per mille.				
	Dharmsala.	Aul.	Jajpore.	Patamundi.	Kendrapara.		Dharmsala.	Aul.	Jajpore.	Patamundi.	Kendrapara.
January	·27	·74	·10	·07	·01	July	·31	·05	·10	·10	·005
February	·62	·50	·13	·17	·55	August ...	·40	·02	·11	·11	·19
March	1·07	·52	·73	·49	·25	September ...	·47	·10	·14	·03	·07
April	1·16	·91	·72	·15	·20	October ...	·96	1·12	·41	·10	·06
May	1·78	·85	·23	·02	·05	November ..	1·71	4·08	2·41	1·08	·35
June	·88	·36	·05	·01	·01	December ...	1·25	1·40	1·16	·31	·24

stores having been destroyed or damaged; and bad water, which was generally contaminated by the dead bodies of human beings and animals, by fallen trees, and other sources of impurity, and, on the sea-coast, by the tanks and wells having been filled with salt water. The Civil Surgeon adds that in general the prevalence and spread of Cholera in February and March were due to insanitary conditions, particularly with regard to the water-supply taken from tanks, wells and rivers, which are contaminated in various ways and the impurity of their water intensified in the dry weather by evaporation.

95. *Puri.*—In this district also the fatality of Cholera was very great, the death-rate being represented by 5·98 per 1,000 of population. In fact there was more Cholera in the district this year than in any year since 1878. All the circles in it experienced high suffering, as will be seen from the figures given in the margin. The outbreak of November 1884 appears to have passed on to this year, and the virulence of this outbreak was intensified in February and again in July by in-coming pilgrims. Dr. Lyons has again taken great pains to connect Cholera with pilgrims, and the records certainly support his statements, for the increase of mortality corresponds with the times during which there are influxes of pilgrims—in February for the Dole Jatra, in July for the Ruth Jatra, and in November for the Panchak Jatra—and the reduction with the months during which the pilgrims are absent. There are a few points in his notes which are worthy of record. He observes that the July outbreak of the disease, which is usually severer than the two others, was intensified this year by an unusually large influx of pilgrims owing to the Ruth Jatra of this year "having been predicted as an auspicious one, so that on the 14th of that month, the first day of the Car festival, it was estimated that sixty thousand pilgrims were assembled in the Baradand to witness it." With regard to Cholera in the town of Puri, where the mortality was unprecedentedly severe this year, it was observed that the periods of increase and decrease of the disease were more defined than in the district, so as to make it, in Dr. Lyons' opinion, certain that it is not of local origin, but imported; for after the outbreak at the time of the Dole Jatra festival it subsided to a minimum of six, three, and five deaths in April, May and June, and that again on the return of the pilgrims in July the deaths rose to 444 in that month, after which it commenced to decline, so that in August there were 31 deaths, in September one, and in October nine; but in November, when the Panchak festival was celebrated, the deaths rose to 106 and was followed by an abatement, the December deaths numbering nine. It appears that Telengs from Madras and other pilgrims from the south having passed Banpur thana in order to reach Puri town enhanced the mortality in this thana. With regard to Gope, which is off the pilgrim route, it is observed that, although the mortality in it was lowest at the times of the Ruth and Panchak festivals in June and November, viz., at ·04 and ·06 per 1,000 of population, in February, at the time of the Dole Jatra, it was greatest in comparison with those of all the months of the year, viz., at 1·81 per 1,000, the death-rates of the other months ranging from ·12 to ·56 per 1,000. This is ascribed to the pilgrims having revisited the Black Pagoda at Kanarack. Independent of this visit, which also took place in some former years without enhancing mortality, an additional reason why the February death-rate was high in Gope is that Cholera was more generally prevalent in the district in that month and continuous from the preceding year. Enough, however, is not known of the previous history of the pilgrims to establish the fact of cholera introduction by their agency, though their presence in Puri undoubtedly indicates the periods of epidemic prevalence. It is to my mind more reasonable to assume that the conditions under which they have lived when travelling, and do live when attending the festivals, are the determining causes of the appearance of the malady, although individual instances of introduction may no doubt be found as are naturally to be looked for. It must not be forgotten also that the death-rates are reckoned on the census population of the town, which is greatly increased at times of festivals. Whatever theoretical views Dr. Lyons may hold on the subject of causation, he attends well to the sanitary wants of the town of Puri.

	Ratio per mille.		Ratio per mille.
Puri town ...	28·76	Pipli thana ...	4·46
Banpur thana ..	11·08	Khurda "	4·39
Puri " ...	6·88	Gope "	3·89

The increase of Cholera *generally* in the district is referred to the fact that the rainfall was very deficient, amounting to 49·74 inches against 60·13, the average of preceding years.

In addition to the measures usually adopted before and during outbreaks of cholera at pilgrimage times, a compounder with cholera medicines was stationed at Saradaipur (the first stage from Pipli on the Cuttack side) and another at Satrabadi (the first stage from Puri) to complete the chain of relief stations at the three principal halting grounds along the Jagarnath Road, from July to the end of the Car festival, to afford aid to pilgrims who may be attacked by cholera, diarrhœa, or dysentery. The lodging-houses were regularly inspected, with the result that many cases of overcrowding and the sale of a kind of mohaprosad made of rice and cooked with coarse sugar or *goor*, bad in quality, generally hard as a stone, mouldy and lumpy, and sold in enormous quantities, were detected. The sale of this objectionable food has very nearly been stopped in the bazar, but cannot be reached within the precincts of the temple. In some cases the overcrowding was serious, and the smell in the rooms sickening. There is no doubt that this overcrowding and the use of this mohaprosad were associated with the other causes which produced the high mortality of the year.

96. *Balasore.*—This district did not occupy this year the unenviable position which it did in the preceding year, viz. that of first on the list of cholera-stricken districts. Although the death-rate was noticeably high, amounting to 3·71 per 1,000 of population, it had diminished by so much as 4·08 per 1,000. The circles which returned the highest death-rates are those named in the margin. The high mortality in Dhamnagar, which occurred principally in October and November, was, it is suspected, caused by the consumption of rice which was rendered unfit for human food by the storm-wave of September. This rice was destroyed as promptly as possible.

	Ratio per Mille.
Dhamnagar thana ...	9·68
Chandbali „ ...	6·68
Balasore town ..	6·11
Basta thana ...	3·76
Bhadrak „ ...	3·30
Baliapal „ ..	2·58

CHOTA NAGPORE.

97. The records of the Chota Nagpore Division of the Province indicate that 6,582 deaths from Cholera occurred in it during the year under review in 4·05 per cent. of its villages and among a population of 4,334,178, representing a death-rate of 1·51 per 1,000. The incidence of the disease during the preceding year resulted in 3,438 deaths in 2·24 per cent. of the villages, or at the rate of ·79 per 1,000 of population, and during the lustrum 1880-84 in 1,613 deaths, or at ·37 per 1,000 of population. These figures demonstrate that there was an increase in both the prevalence and fatality of the disease in comparison with the outcomes of the periods above mentioned. On the whole, however, the mortality was not excessive, and compared with the death-rates in the other Divisions of the Province, it was the lowest.

Cholera prevalence in the Chota Nagpore Division.

98. The marginal table presents the Cholera statistics of the four districts in the Chota Nagpore Division of the Province. Relatively considered, of these districts only Hazaribagh exhibited a high rate of mortality. In association with former periods, Hazaribagh, Lohardugga and Singbhum furnished returns indicating greater prevalence and fatality of the disease in comparison with both the preceding year and the lustrum 1880-84, but Manbhum exhibited a diminution under both heads as compared with 1884 against an increase of mortality as compared with the quinquennium 1880-84. The months of greatest prevalence of the disease varied in these districts. In Hazaribagh and Manbhum the period commencing in May was prolonged into

Cholera prevalence in the Districts in Chota Nagpore.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Hazaribagh ...	6·48	4·19 *I*	3·35	2·19 *I*	2·88 *I*	May to October.
Lohardugga .	·76	·58 *I*	·47	·36 *I*	·33 *I*	August to October.
Singbhum ...	2·61	1·88 *I*	·60	·41 *I*	·42 *I*	April and June.
Manbhum ...	4·70	·95 *D*	1·66	·08 *D*	·95 *I*	May to July.
Total ...	4·05	1·81 *I*	1·51	·72 *I*	1·14 *I*	May to September.

October in the former district and limited to July in the latter. In Lohardugga it commenced later, that is, in August and extended to October. In Singbhum it lasted only two months, April and June. The largest amount of rain fell during June to September in all the districts, but in Singbhum the rains were prolonged into October.

99. *Hazaribagh.*—In this district Cholera did not prevail very diffusely, as only 6·48 per cent. of the villages were affected; but the mortality caused by it was great, amounting to 3·35 per 1,000 of population. It did not enjoy the immunity from the disease which it experienced for years past, inasmuch as only 1·16 per 1,000 of the population were carried off by it in 1884 and ·47 per 1,000 during the lustrum 1880-84. The marginally named circles furnished the highest casualty rates.

			Ratio per mille.				*Ratio per mille.*
Hazaribagh	town	...	11·23	Chatra	thana	...	3·93
"	thana	...	7·22	Kharakdiha	"	...	3·58
Burhi	"	...	6·14	Tandowa	"	...	3·42
Pachamba	"	...	5·26	Chowparan	"	...	3·36
Kodarma	"	...	5·18	Gawan	"	...	2·75
				Bagodhar	"	...	2·27

Of these circles Chatra is situated in the extreme west of the district, Hazaribagh in the central part, and the rest in the north and east. As to the local distribution of the disease, it again followed its usual course. Commencing in the north and east in the spring, as usual, it confined itself to the lower levels of the district till the rains set in, then spread to the higher levels in the south and west, and disappeared as the cold weather set in. In connection with seasonal fatality it assumed serious proportions with the setting in of the rains in June, became epidemic and raged all over the district during the next month, excepting in thanas Simoria and Ramghar, reached maximum intensity in August, declined considerably in September, exhibited further abatement in October, and disappeared by the middle of November. The outbreak in the town of Hazaribagh, resulting in the high mortality exhibited above, commenced on the 22nd June and lasted till October, proving most fatal in July and August. The Civil Surgeon says that the majority of the cases occurred in the outlying villages of Khirgaon, Ooregah, Mutwari and Murrai, and that the town and bazar suffered comparatively little. He found these villages in an insanitary condition. There was an entire absence of drainage, the houses were old and rotten, filthy accumulations abounded, the wells were shallow and highly polluted, &c. A large gathering of ryots, who came to Burhi for opium weighments, were attacked in May by the disease. It prevailed very virulently, and it is said that the mortuary return of this month does not contain all the deaths that took place, for the Opium Agent asserts that he never in his experience saw "more wholesale and fearful mortality among his Assamees." Of the men who came to Burhi 15 died at Chandwara, eight miles south of Burhi, thus carrying the disease to this village. This outbreak was attributed to intense heat, entire want of shade and shelter and good water, and absence of sanitary and latrine arrangements. My suggestions for the observance of proper sanitation at these gatherings, which are applicable to Burhi also, have already been submitted to Government, and are given at the end of paragraph 91 of this Report. An outbreak of Cholera occurred at the Madhubun or Parisnath gathering of pilgrims in February. This I consider was the beginning of the disease in the district, and not that which took place among the opium ryots in Burhi above adverted to.

Under orders of Government special enquiries were made by me as to the health conditions of the towns and villages on the Grand Trunk Road and to the north-west of Hazaribagh, where Cholera was alleged to have prevailed severely. My report on the subject, together with suggestions for the better protection of the people from epidemic disease, was submitted to Government. A condensed abstract of that report follows. It should be stated that this enquiry also embraces the district of Manbhum. To make the investigation as complete as possible as bearing upon the influence of the Grand Trunk Road as a means of diffusing Cholera in the Hazaribagh district, I began my inspection at Ranigunge; proceeded thence to Barakur; saw there the conditions under which the great crowds are employed on the coal industry; thence I followed the Grand Trunk Road as far as it traverses Manbhum and up to Burhi, visiting every place of importance either on or near the road, examining carefully the chattis or bazars which have grown up round the military and trade halting stages, and tracing the influence of trade and pilgrim routes

on Cholera. From Burhi I struck down to the Hazaribagh station, specially examining the village of Pudma and the town of Echack, which attracted my attention as having suffered severely from the late Cholera outbreak. Many sanitary defects were discovered during this enquiry, which might be briefly summed up as applying chiefly to (*a*) deficient and impure water-supply; (*b*) accumulation in, and non-removal of rubbish and cattle dung from within village limits; and (*c*) the carrying on of certain trades within villages' resulting in the discharge of decomposing organic matter which is not properly disposed of. Upon these points I made the following suggestions:—

(*a*) That it would be well to increase the supply of good water along the Grand Trunk Road in Manbhum and Hazaribagh, leaving the general question of district water-supply to be dealt with hereafter when the Local Self-Government Act comes into operation.

(*b*) That the strictest attention should be paid to the general cleansing of the chattis or halting stages.

(*c*) That special arrangements should be made for the water-supply, housing, conservancy, &c., of ryots who collect together for the weighment and delivery of opium.

(*d*) That similar arrangements be made for the pilgrims and others at Parisnath.

(*e*) That objectionable trades should be carried on outside halting places.

(*f*) That the south side of the Grand Trunk Road from Barakur to Burhi should be planted with trees.

(*g*) That the Maharani of Kassimbazar should be asked to instruct her manager to attend to the water-supply of the villages near the Barakur Railway Station, and that the East India Railway authorities should be requested to improve the condition of the tank at the Barakur Railway Station.

100. *Lohardugga and Singbhum.*—Although the mortality from Cholera in these districts was somewhat higher than during the preceding year and the lustrum 1880-84, it did not assume serious proportions, for it amounted to only ·47 and ·60 per 1,000 of population, respectively. The only circles in which noticeable mortality occurred were Chorea in Lohardugga—death-rate 4·82 per 1,000—and Chyebassa town in Singbhum—death-rate 7·99 per 1,000. In the former district, moreover, no deaths took place in thanas Torpa, Burway, Korambi, Palkot, Biru, Bassia, Chhuturpore, Barasara and Manikha. Eliminating Torpa, all the rest of these thanas enjoyed similar immunity in 1884. It appears that some villages in thanas Ranchi, Manda and Boondoo were severely attacked by Cholera from 5th July to 21st September. These villages were in an insanitary condition, but, according to the Magistrate, not more so than others which were not affected. In Singbhum some portions of thanas Chyebassa, Chuckerdhurpore, Anandpore, Kera, Seraikela and Kharsowan are said to have been epidemically visited by the disease. But I think the Cholera in Singbhum can hardly be called an epidemic visitation. A smart outbreak occurred in the Chyebassa town, commencing on the 16th March and terminating on the 6th April, during which there were 68 seizures and 42 deaths. The first cases occurred in the persons of two women who had come from Bamanghatty (where, however, it was not ascertained that cholera was present) to the part of the town called Madhubun on the 16th March. During the night of that day they were attacked. On the 20th March two of a company of musicians, living in the mussafirkhana (building for travellers), not far from the house where the women had put up, were attacked. Three cases then occurred in houses opposite the mussafirkhana; but the majority of the cases occurred in the neighbourhood of the house in which the two women resided. This Cholera occurred in the persons of outsiders, but cannot be said to have been introduced into the town.

101. *Manbhum.*—Here the mortality from Cholera was almost as low as in the preceding year, the death-rate reaching only 1·66 per 1,000 of the population against 1·74 per 1,000. Nevertheless the circles named in the margin returned noticeably severe

	Ratio per mille.		*Ratio per mille.*
Purulia town ...	5·26	Jheria thana ..	2·28
Para thana ...	4·68	Raghunathpur „ ...	2·22
Jaipur „ ...	4·12	Chass „ ...	2·17
Nirsha „ ...	3·43	Gourangdi „ ...	2·16

casualty rates. Para, Nirsha, Raghunathpur and Chass are thickly populated. Of noticeable local outbreaks of the disease the following may be cited. A smart outbreak occurred in the sudder station of Purulia in May and June during which 53 were attacked and 34 died. A few cases occurred in June and July among pilgrims on the Grand Trunk Road between Topchanchi and Nirsha. Another, a severe one, occurred in Jaipur in July, when 106 cases with 83 deaths were reported. Jaipur is a great thoroughfare and halting place of pilgrims, emigrating coolies and other travellers, and it is suspected that the disease was imported by some of them.

102. **Port of Calcutta.**—Of 23,573 *European seamen* who entered the Port during the year under review, only 16 were admitted into hospital for cholera and 7 died, or at the rate of 4·13 per 1,000 of the Port population estimated at 1,693. It will be seen from the figures given in the margin that in comparison with the preceding five years, the records of this year show a very considerable abatement both in the prevalence and fatality of the disease. This is a very gratifying fact.

Cholera among European Seamen.

	Admissions into hospital.	Ratio of deaths per mille.
1885	16	4·13
1880	23	10·0
1881	51	24·4
1882	61	22·8
1883	65	19·8
1884	67	21·3

103. The marginal figures, taken from the report of the Health Officer of the Port, compare the mortality from Cholera in the Port with that which occurred in the country abutting it, viz., in Calcutta and its Suburbs and in the Howrah Municipality during the years 1880 to 1885. The comparison indicates that the Port death-rate approximates that of Calcutta throughout these years, excepting in 1885 when it was much less; but that it was considerably lower than those of the Suburbs of Calcutta and of the Howrah Municipality throughout the period under notice.

Comparative mortality in the Port and the Country abutting it.

	Population.	1880.		1881.		1882.		1883.		1884.		1885.	
		Number of Deaths.	Ratio per 1,000.	Number of Deaths.	Ratio per 1,000.	Number of Deaths.	Ratio per 1,000.	Number of Deaths.	Ratio per 1,000.	Number of Deaths.	Ratio per 1,000.	Number of Deaths.	Ratio per 1,000.
Port of Calcutta	28,200	42	1·48	89	3·10	156	5·5	154	5·4	175	6·2	67	2·3
Town of ,, ...	401,671	762	1·86	1,601	3·9	2,11[illegible]	5·2	1,911	4·7	2,139	5·3	1,541	3·8
Suburbs of ,, ...	251,439	977	3·87	1,971	7·83	2,470	9·82	2,177	8·65	2,4[illegible]1	9·62	1,936	7·69
Howrah Municipality.	105,628	217	2·21	489	4·67	668	6·32	653	6·18	701	7·78	325	3·57

104. Of the *Native Floating Population*, numbering 25,409, 59, or at the rate of 2·32 per 1,000, died from cholera. The number of deaths and the proportionate death-rates to population during the preceding five years are cited in the margin. From these figures it will be apparent that the above class of seamen also enjoyed great immunity from the disease in 1885 in contrast with its incidence during the period with which comparison is instituted, having suffered less than in any year of that period excepting 1880.

Cholera among the Native Floating Population.

	Deaths.	Ratio per mille.
1880	36	2·25
1881	70	2·75
1882	115	4·52
1883	116	4·56
1884	138	5·43

SMALL-POX.

105. The returns of the Province for the year under review show, in comparison with similar information afforded by those of the preceding year, that 9,863 persons, against 18,533, died from Small-pox; that the proportionate death-rate to population was ·14, against ·28 per 1,000; that the malady affected with more or less severity only 18 circles against 53, and was absent from 272 against 224; and that it prevailed in 2·42 per cent. of the villages against 2·96 per cent. It is gratifying to find from this record that the prevalence and severity of the disease had abated very considerably in comparison with its incidence during 1884. Extending the comparison further, it is seen that the death-rolls of this year contain a smaller number (in some years considerably lesser) of casualties from Small-pox than has been recorded since the year 1876, eliminating 1877 and 1883, during which years the numbers were lower, *vide* marginal figures.

Extent of prevalence and fatality of Small-pox.

	Number of Deaths.		Number of Deaths.
1876	10,746	1880	22,953
1877	8,088	1881	24,371
1878	12,410	1882	13,651
1879	22,843	1883	9,714

106. The contributions to the total mortality of the year from Small-pox by the urban and rural circles of the Province are shown in the margin. The figures denote that both relatively and in comparison with the incidence of the disease in 1884, the suffering was greater in the urban circles than in the rural, the inference being that the latter circles may be better protected from the disease than the former.

Mortality from Small-pox in the Urban and Rural circles.

	Deaths 1885.	Deaths 1884.	Ratio per mille 1885.	Ratio per mille 1884.
Urban Circles	774	2,711	·33	1·10
Rural „	9,089	15,822	·14	·24

107. The following are the 19 circles above referred to (paragraph 105) as having suffered to a noticeable extent from the disease. It will be noticed that the larger number of the circles (the districts considered individually) which returned high mortality belong to the Chumparun district.

Localities of severe prevalence of Small-pox.

TOWNS.

	Ratio per mille 1885.	Ratio per mille 1884.		Ratio per mille 1885.	Ratio per mille 1884.
Dacca	2·74	1·67	Mokamah	1·31	·21
Bettiah	2·11	1·08	Kendrapara	1·27	1·72
Ranigunge	2·01	1·82	Beauleah	1·06	1·97
Durbhanga	1·33	1·24			

RURAL CIRCLES.

	Ratio per mille 1885.	Ratio per mille 1884.		Ratio per mille 1885.	Ratio per mille 1884.
Lauria in Chumparun ...	2·79	1·56	Masaudhi in Patna ...	1·29	1·49
Daltongunge in Lohardugga ...	1·88	·60	Govindgunge in Chumparun	1·23	1·38
Arwal in Gya	1·77	·77	Bettiah in ditto ...	1·16	·98
Bikram in Patna	1·46	1·48	Kasaria in ditto ...	1·11	·66
Adapore in Chumparun ...	1·43	1·07	Aurungabad in Gya ...	1·04	1·29
Patan in Lohardugga ...	1·35	·06			

108. The experience of this year again indicates that small-pox is most prevalent during the hot months of March to June, for of the total deaths of the year, 6,276 occurred during these four months against 3,587 during the remaining eight months, the means of the preceding lustrum for these periods being 10,164 and 7,680, respectively.

Seasonal fatality of Small-pox.

Mortality from Small-pox among Infants and Children.

	Deaths.	Proportion per cent. to total mortality.
Under 1 year	2,217	22·47
1 to 6 years	3,851	39·04
6 to 12 „	1,346	13·64
Total under 12 years ...	7,414	75·17

109. This information is furnished in the margin. The figures again demonstrate that the largest proportion of the mortality from Small-pox occurs among infants and children, as no less than 75·17 per cent. of the total mortality from this cause was borne by them.

Chief particulars relating to Small-pox in the Districts.

110. The interesting points connected with the incidence of Small-pox in the districts may be summed up as follows:

The steady decline of mortality from Small-pox in the *Midnapore* district, viz., from 591 deaths in 1878 to 137 during the year under review, is with reason stated to be due to the spread of vaccination. In *Howrah* the largest number of deaths from Small-pox occurred in the Jaggatbullubpore thana viz., 31 out of a total of 63, indicating that this thana needs more attention from the Vaccination Department. Small-pox is said to have been introduced into *City Murshidabad* by a boy 18 years old who had been vaccinated when he was two years of age and who had gone to, and returned from Calcutta. The disease broke out in him two days after his return, after which there occurred 52 cases in the quarter in which he lived. The Magistrate of *Dinajpur* writes: "Small-pox was almost wholly absent, and this fact is contemporaneous with extended operations of the Vaccination Department throughout the district." There were 8 deaths in this district, of which only one occurred in the town.

There was a small excess of mortality from small-pox in the *Rajshahye* district, but it is noticeable that the largest number of the deaths—21 out of 59—occurred in the Beauleah Municipality. It strikes me that this Municipality acts as a centre of infection of the district which is generally much better protected than the town. The Civil Surgeon of *Rungpore* examined 313 boys in the Rungpore school, of whom he found 207 vaccinated, 52 inoculated and 54 unprotected. This shows how much vaccination is neglected in the Rungpore town, and the necessity of introducing into it the Compulsory Vaccination Act. Only one death from small-pox was reported to have occurred in the whole of the *Darjiling* district. Dr. Ashe, the Civil Medical Officer of *Julpaiguri*, observes that in examining a reported case of small-pox, he found that, with the exception of from a dozen to a dozen and half of vesicles filled with a clear fluid which disappeared in three days' time, there were no other symptoms of the disease. He says that he had often noticed this vesicular appearance as a sequela of fever in this district; but I should observe that deaths from measles are often registered under the head of small-pox. During the first-half of the year 208 deaths occurred from small-pox in the *Dacca* town, and this mortality contrasted with that of previous years,* shows that the disease may be absent for years from a badly protected town and then reappear with a heavy mortality. Even in the *district* where the mortality stood at ·22 per 1,000 of population, the disease is too prevalent, indicating defective vaccination. In the *Faridpore* town there were only 5 cases of small-pox attended by 3 deaths, and all these cases occurred among an up-country Brahmin family living in one section of the town. They were not protected by either vaccination or inoculation and were strongly opposed to both measures; but they have since they were attacked by the disease recognised the utility of vaccination. The *Chittagong* town shared in the general immunity from small-pox which the Province enjoyed this year, but the Civil Surgeon says: "If it does get introduced, there can be no doubt but that the mortality will be large amongst the rising generation, who are almost unprotected. The adult population are, to a great extent, protected by inoculation or previous attacks of small-pox" He also apprehends that its unprotected state is likely to act very unfavourably on the prospects of its Port. There was, on the whole, considerably less small-pox in the *Patna* district; but it was present in every circle, and 421, or more than half the total deaths were recorded, 265 in Bikram, and 156 in Masouri. These thanas call for the attention of the Vaccination Department. A very sensible decrease of mortality from the disease occurred in the *Gya* district, viz., from 3,289 deaths in 1884 to only 819 this year, although this district is wholly unprotected by vaccination. On the other hand, the number of deaths in *Shahabad* was nearly double that of 1884, viz., 664 against 396, following, I suspect, increased activity in inoculation in opposition to Government vaccination. In the *Chumparun* district also there was a considerable increase of mortality from the disease, the deaths having risen from 1,733 in 1884 to 2,058 this year. In the *Sonthal Pergunnahs* district the Godda sub-division suffered rather severely. It is gratifying to find that there was less mortality from small-pox in the *Cuttack* district during this year than in recent years. The casualties amounted to 826, or at ·46 per 1,000 of population, against 3,179, or at 1·77 per 1,000, during the lustrum 1880-84. It was noticed that the protection afforded to Banpur thana in the *Puri* district in 1883 was followed by a sensible reduction in mortality from small-pox, for the deaths which amounted in that year to 526 fell to 94 in 1884 and to 3 in 1885, viz., 2 in January and 1 in March. Dr. Wood, the Deputy Sanitary Commissioner, Darjiling Circle, reports that in Hazaribagh 577 cases and 84 deaths from small-pox occurred. There was a great increase of mortality from the disease in the *Lohardugga* district, the death-rate having risen from ·09 per 1,000 of population in 1884 to ·21 per 1,000 this year, and the Palamow sub-division furnished the bulk of the mortality which according to Dr. Wood amounted to 148 deaths in 987 cases. This officer adds that thana Balumath in the same district had 114 cases and 14 deaths. The amount of small-pox in the two last named districts illustrates in the strongest manner how extremely imperfect protection by vaccination has been afforded to them. Only one death was recorded in the *Singhbum* district, and there was less mortality in *Manbhum* than since 1881.

*	
In 1880	Nil.
„ 1881	3
„ 1882	Nil.
„ 1883	Nil.
„ 1884	135

FEVER.

111. This disease caused during the year under review the death of 1,042,142 persons, or at the rate of 15·75 per 1,000 of the population under registration in the Province. Marginally is tabulated the mortality from this cause in each year of the preceding decade.

Extent of prevalence and fatality of Fever.

	Deaths.	Ratio per mille.		Deaths.	Ratio per mille.
In 1875 ...	368,087	5·56	In 1880 ...	689,605	10·43
" 1876 ...	561,537	8·49	" 1881 ...	940,911	14·23
" 1877 ...	711,036	10·75	" 1882 ...	929,943	14·06
" 1878 ...	712,887	11·23	" 1883 ...	913,766	13·81
" 1879 ...	622,260	9·41	" 1884 ...	966,233	14·60

It attacked in 1885 63·73 per cent. of the villages against 64·78 in 1881, and was present in every circle, prevailing with great virulence in 24 of them against 29, with subdued activity in 154 against 116, and with normal severity in 469 against 504. These statistics indicate that, in comparison with its incidence in 1885, the disease was less extensively diffused but considerably more fatal, and that in no one year of the past decade, 1875-84, was the casualty rate so high as in the year under review. The steady advance in the death rolls, year by year, and the fact of a higher mortality occurring in a smaller area pervaded by the disease during this year bears out, in a great measure, my opinion that some portion of the numerical increase in the number of deaths recorded is due to improving registration.

112. The total mortality from fever was shared by the urban and rural circles in the Province in the proportions exhibited in the margin in contrast with the contributions of the preceding year. The figures again establish the fact that the rural circles are more prone to fever.

Comparative mortality from Fever in the Urban and Rural Circles.

	Deaths.		Ratio per mille.	
	1885.	1884.	1885.	1884.
Urban Circles ...	32,809	31,701	14·40	12·89
Rural " ...	1,009,333	934,532	15·79	14·66

113. The figures under this head indicate that in seasonal fatality the disease followed the same course as it did in former years, viz., that it began to exhibit severity after the rains had well set in and was most virulent during the last quarter of the year, reaching culminating intensity in November.

Seasonal incidence of Fever.

Months.		Deaths in 1885.	Rainfall in 1885.	Average deaths in 1880-84.
January	...	79,404	·21	77,905
February	...	70,041	1·26	62,546
March	...	80,208	·84	63,484
April	...	75,777	1·55	65,341
May	...	71,618	4·18	60,991
June	...	64,506	11·85	54,278
July	...	67,269	14·70	59,454
August	...	86,199	17·81	67,214
September	...	99,323	13·45	71,432
October	...	110,929	2·92	86,976
November	...	125,467	·53	109,216
December	...	111,101	·94	109,254

114. The districts which experienced the severity of fever most during the year under notice are those named in the margin. Nuddea again heads the list, but it is gratifying to find that the fatality of the disease in it has subsided very considerably, viz. from the death-rate of 35·54 per 1,000 of population in 1881 when it prevailed epidemically, to 26·85 per 1,000 this year. It is also satisfactory to notice that Burdwan and Birbhum do not re-appear in this list of high suffering districts.

Districts in which Fever prevailed most severely.

Districts.		Ratio per mille.	Districts.		Ratio per mille.
Nuddea	...	26·85	Jessore	...	21·44
Monghyr	...	25·65	Bogra	...	21·21
Pubna	...	25·63	Gya	...	20·71
Rajshahye	...	24·03	Shahabad	...	19·72
Julpaiguri	...	23·71	Murshidabad	...	19·56
Bhagulpore	...	23·13	Purneah	...	19·22
Rungpore	...	22·72			

115. The principal statistics bearing on the incidence of fever in the Divisions of the Province and in Districts and such details of local outbreaks of the disease as appear to be interesting are subjoined.

General history of Fever in the Divisions of the Province and in Districts.

BENGAL.

116. In Bengal Proper 588,986 deaths were reported to have occurred from Fever in 67·82 per cent. of its villages, being in the proportion of 16·79 per 1,000 of its population estimated at 35,073,770, as opposed to 584,893 deaths in 70·42 per cent. of the villages, or at 16·67 per 1,000 in the preceding year, and to 553,964 deaths, or at 15·79 per 1,000, in the lustrum 1880-84. These figures denote that with a considerable reduction in extension of the disease,

Incidence of Fever in Bengal.

there was, in comparison with 1884, a small increase of mortality, amounting to ·12 per 1,000 of population, and, in relation to the lustrum 1880-84, a greater increase, viz. to the extent of one per 1,000. The fourth quarter of the year was, as usual, the unhealthiest, and, in accordance with the law of former years, there was more Fever in Bengal than in any other Division of the Province.

117. The marginal table presents the fever statistics of the six districts which compose the Burdwan Division of Bengal. They indicate that the disease prevailed over larger areas in Bankura, Midnapore, Hughli and Howrah, and over smaller ones in Burdwan and Birbhum; and that while the mortality was not excessive in any of the districts, it was greater in Hughli and Howrah in comparison with that which occurred during both the two periods mentioned in the table. With regard to seasonal prevalence of the disease the earlier months of the year exhibited variations in point of duration in each district, but its winter incidence extended in all the districts from September to December, except that in Burdwan it did not last beyond November.

Incidence of Fever in the Burdwan Division.

Districts.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Burdwan	84·10	1·58 *D*	17·78	1·03 *D*	5·08 *D*	January to March and September to November.
Bankura	62·39	2·47 *I*	12·35	1·21 *D*	5·22 *D*	March and September to December.
Birbhum	73 52	9·63 *D*	16·25	8·28 *D*	6·35 *D*	January to March and August to November.
Midnapore	66·34	·01 *I*	14·53	·26 *D*	·22 *D*	September to December.
Hughli, including Serampore.	86 10	7·87 *I*	15·74	1·72 *I*	·89 *I*	January and September to December.
Howrah	72·25	5·81 *I*	10·01	1·62 *I*	1·47 *I*	March and September to December.
Total ...	70·11	·15 *I*	14·79	·44 *D*	2·21 *D*	September to December.

118. *Burdwan.*—The improvement in fever prevalence which has been taking place in this district during recent years, continued most markedly this year. The mortality, amounting to 17·78 per 1,000 of population, was lower than that of 1884 by 1·03 per 1,000 and of the lustrum 1880-84 by 5·08 per 1,000; and only the six marginally-named circles out of 20 in the district presented noticeable mortality. If the registration is correct, this improvement in the health of the district generally is a congratulatory fact, considering that following the natural law, the population must be larger now than in former years, and that, consequently, the fever peculiar to this district, which was characterized by great fatality, should have furnished a larger number of deaths than has been recorded; but I fear that, the district forming no longer a special subject of attention and enquiry, the registration is also getting slack. It appears that in this district most parts of the thanas in the Sudder, Raniganj, Culna and Cutwa sub-divisions were inundated in August and September. The effect on health caused by this flooding is illustrated in the margin. On the whole it appears to have proved beneficial.

		Ratio per mille.
Burdwan town	...	24·82
Selimabad thana	...	21·36
Burdwan „	...	21·33
Kaksa „	...	21·31
Bud-Bud „	...	20·19
Purbasthali „	...	19·73

		Ratio per mille. October.	November.	December.
Sudder ...	1885 ...	1·63	1·58	1·42
	1884 ...	1·54	1·69	2 11
Raniganj ...	1885 ...	1·36	1·26	1·32
	1884 ...	1·67	1·96	1·62
Culna ...	1885 ...	1·78	1·73	1·54
	1884 ...	1·89	2·10	2·12
Cutwa ...	1885 ...	1·56	1·73	1·37
	1884 ...	2·42	2·52	2·44

119. *Bankura.*—This district also enjoyed much immunity from the disease. Its recorded mortality amounted to only 12·35 per 1,000 of population and was lower than during 1884 and the quinquennium 1880-84 by 1·21 and 5 22 per 1,000, respectively. None of its circles returned notably high death-rates, but the mortality in the Kotalpur, Bissenpur and Indas thanas was higher than in the rest of the circles, viz. 17·75, 15·09 and 14·85 per 1,000 of population. The causes of the unhealthiness of Kotalpur and Bissenpur have been mentioned in my Report for the last year. The Assistant Surgeon in medical charge is of opinion that "the whole district may now be fairly considered as thoroughly included within the endemic area of malarious fever," and he observes that all the villages in the district outside the limits of the Bankura town "present a marked similarity in their insanitary conditions—flat

low-lying badly drained places, with a stiff soil extremely retentive of moisture, and decomposing marshes form the peculiar feature of the places;" that in the town of Bankura, where the natural drainage is excellent so that stagnant pools of water are scarcely seen and the ground moisture is at its lowest from the extreme porosity of the soil, there is scarcely any malaria worth the name and malarious cachexia is unknown; while in the district, even in places at the distance of a few miles from the town, fever prevails to an unusual extent and malarious cachexia is strongly marked.

120. *Birbhum.*—This district recorded a fever mortality of 16·25 per 1,000 of population, which, compared with 1884, presents a fall of 3·28 per 1,000 and with the lustrum 1880-84 of 6·35 per 1,000—in fact so low a death-rate was not experienced in the district during the last decade. It is hoped that "the decline will be steady and progressive so as to restore the district to its former reputation of a sanitarium." Notwithstanding this general immunity, there were circles in which the suffering was noticeably high. They are named in the margin. It will be noticed, however, that in all these circles, excepting Rampurhat, the casualty rates were considerably lower than in 1884. The Sakulipur thana is said to be one of the most unhealthy parts of the district, owing to its low position and somewhat water-logged condition during the rains.

	Ratio per mille. 1885.	1884.
Soori thana	20·17	25·30
Bolpur „	18·67	26·55
Soori town	17·07	20·51
Rampurhat thana	15·95	15·30
Sakulipur „	15·94	19·19

The Civil Surgeon observes that the heavy rainfall of the year, particulary that of September, had, by scouring the surface of the ground, flushing all the cess-pools and washing away surface impurities, the effect of nipping in the bud the generation of malaria and of minimizing the prevalence of fever, and that from the some effects the inundated portions of the district enjoyed comparative immunity, notwithstanding the water-logged condition of the soil which helps to bring about the disease. He adds that he was struck with the clean appearance the villages he passed presented, and that instead of dirty shallow tanks over-grown with weed and vegetation, every tank was brimful of good clear water, the manure pits were washed out, and, in fact, the aspect of the villages was altogether changed.

121. *Midnapore.*—It was stated in the Report for 1884 that the incidence of fever in this district had been steadily declining for years past. This decadence was not disturbed in the present year, for during it the mortality stood at 14·53 per 1,000 of population against 14·79 in 1884 and 14·75 in the lustrum 1880-84. The circles which returned the highest casualty rates are noted in the margin. Referring to the great increase of mortality in the Panchura thana, amounting to 8·29 per 1,000 of population, Dr. Peck, the Civil Surgeon, says that it is due to a large area in this thana having been inundated; but in a subsequent portion of his report he observes that in the other inundated tracts there has been no large increase in deaths, and that the high suffering in this thana, as well as in the southern part of thana Tumlook, is referable to bad drainage and the decomposition of vegetation.

	Ratio per mille.		Ratio per mille.
Panchura thana ..	19·15	Debra thana ...	17·98
Pataspur „ ...	18·34	Dantun „ ...	17·83
Narainghar „ ...	18·20	Chandrakona „ ...	17·35

The Magistrate is opposed to the opinion of the Civil Surgeon with regard to the effect of the inundations. He says that the supply of pure water which the country received from the Siloi and Cossye rivers caused a mitigation of the usual malarious fever. The marginal statistics illustrate how far the inundation, which occurred in August and September, tended to increase or decrease mortality in the areas affected by it.

Sub-divisions.		Ratio per mille. October.	November.	December.
Sudder ...	1885	1·40	1·56	1·41
	1884	1·36	1·73	1·72
Ghatal ...	1885	1·61	1·67	1·48
	1884	1·13	1·61	1·59
Tumluk ...	1885	1·16	1·28	1·19
	1884	1·03	1·26	·97

122. *Hughli.*—In this district the prevalence and fatality of fever were greater. The recorded mortality amounted to 15·74 per 1,000 of population, and this rate, although not excessive, was higher by 1·72 per 1,000 as compared with the returns of 1884 and by ·89 in comparison with those of the lustrum 1880-84.

	Ratio per mille.
Hughli thana	31·76
Pandua „	22·20
Shambazar town	22·14
Polba thana	20·74

The circles which returned the highest death-rates are indicated in the margin. The Civil Surgeon notes that the inundations in this district caused considerable increase of fever, and that this is not so apparent in the rural as in the urban tracts. This opinion is at variance with most others, and is, I fear, not given as the result of any careful enquiry. The urban tracts are those not generally flooded As the exact localities covered by the inundation have not been named, I am unable to test this opinion. The silted-up condition of the Sarasati and Kananuddi referred to in the last year's Report as well as of other channels came under the observation of Dr. ffrench-Mullen, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles. He describes them as chains of stagnant pools, and states that "when the villagers are asked if the re-opening of them would benefit the people living along their banks, they answer in the affirmative, their faces becoming like that of a greedy child who is offered an orange," and he suggests that Government should urgently take up the question of the rapid decay of these and numberless other branch rivers. I am glad to note that Government has issued orders that the obstructions to the free flow of water in the channels of the Kananuddi and Sarasati should be removed by the canal officers, the local officers affording them every assistance, and that the villagers along these channels should be publicly informed that the erection of dams is illegal and will be punished according to law. Dr. Mullen, however, says that in thana Haripal the Kana river has been forced at its source within the last few years, and that since then there has been little malaria in the villages on its bank; while prior to the opening up of the river fever played great havoc in some, if not most, of these villages. This officer also visited a large number of villages in thana Jehanabad, and some in thana Goghat, and he notes that although there is very little jungle in the majority of them, and the water of the fields seems to have a free outflow into the river and certain khals, still nearly every child bears marks of blistering over the region of the spleen, while many have very large spleen, but they are free from fever this year. Both young and old look thin and poverty-stricken as a rule. They complain that this is the first year since 1880 or 1882 that their rice has not failed, and the rainfall has not been scanty, and they attribute their poverty to the drought of former years, and it is believed that the plentiful rains of this year has driven away the malaria. Dr. Mullen sees no other reason than that stated above for attributing their suffering so severely from malaria during the last few years.

123. *Howrah.*—In this district also fever prevailed more extensively and fatally than in the preceding year. The total mortality was 10·01 per 1,000 of population against 8·39 per1,000 in 1884 and 8·54 per 1,000 during the quinquennium 1880-84; but these low rates are, I fear, indicative of more than ordinary incompleteness in registration, for there is no reason to believe that this district suffers so much less from fever than the others in the Burdwan Division. The only noticeable observation made in the local reports is that fever declined during the rainy months of June, July, and August, and reached maximum fatality in October and November.

124. The statistics connected with the incidence of fever in the districts in the Presidency Division of Bengal are contained in the marginal table. They show that while, on the one hand, there was an increase in the prevalence of the disease in all the districts, excepting Murshidabad; on the other hand, there occurred a diminution of mortality in all, excepting 24-Pergunnahs, as compared with 1884, and Jessore as contrasted with the

Incidence of Fever in the Presidency Division of Bengal.

Districts.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
24-Pergunnahs ...	80·35	·10 *I*	14·25	·09 *I*	1·66 *D*	January, November and December.
Nuddea	89·96	2·70 *I*	26·85	2·37 *D*	7·28 *D*	March, April, September to December.
Jessore	85·19	8·01 *I*	21·44	·97 *D*	·89 *I*	January, October to December.
Khulna	82·52	15·12 *I*	18·15	·37 *D*	·08 *D*	January, October to December.
Murshidabad ...	76·87	5·10 *D*	19·56	·69 *D*	2·97 *D*	September to November.
Total ...	82·55	3·69 *I*	20·11	·88 *D*	1·19 *D*	January, October to December.

quinquennium 1880-84; that in relative mortality Nuddea and Jessore exhibited the highest rates; and that the months of greatest prevalence of the disease were generally October to December and January. The last-named month was, however, exempt from high mortality in Nuddea and Murshidabad.

125. 24-*Pergunnahs.*—The returns of this district exhibit a death-rate of 14·25 per 1,000 of its population, which rate exceeds that of 1884 by only ·09 per 1,000, but is lower than that of the lustrum 1880-84 by 1·66 per 1,000. The highest casualty rates were presented by the circles named in the margin. It is noticed as an important fact that the Bussirhat sub-division, which was the only tract which had been inundated, alone exhibited a death-rate lower than that of the preceding year, the other sub-divisions returning excesses; but it should be mentioned that the difference is not great—18·12 as opposed to 18·60 per 1,000 of population; that in this sub-division only one thana Baduria returned a noticeably lower death-rate, viz. 21·90 against 25·18 per 1,000; and that diminution in mortality was also a feature of the Baraset sub-division which presented a casualty rate of 19·23 against 20·21 per 1,000, although it was not inundated. But looking into the returns of the Bussirhat sub-division for the three months which followed the flood, it is seen that this year October exhibited a death-rate of 1·53 per 1,000 of population, November of 1·74 per 1,000 and December of 1·75 per 1,000 against 1·83, 2·62 and 2·60 per 1,000, respectively, in 1884. In general fever prevails in this district most during the first half of the rains, and attains maximum severity in the cold weather. The Chairman of the Baraset Municipality ascribes the increase of fever which occurred in it to exceptional rainfall, adding that the period from the month of Srabun (halves of July and August) to the month of Kartick (halves of October and November) is called the "Jomashtuck," that is when the eight doors of the god of death are open.

	Ratio per mille.		*Ratio per mille.*
Naihati thana ...	21·91	Baraset thana ..	18·82
Baduria „ ...	21·90	Barrackpore „	18·00
Deygunga „ ...	21·39	Naihati town ...	17·87
Bussirhat „ ...	19·55	Harwa thana ...	17·56

126. *Nuddea.*—In this district there was much extension of the disease, the area covered by it being represented by 88·96 per cent. of the villages against 86·26 in the preceding year. But it is very gratifying to find that the mortality had diminished considerably, the total casualty rate amounting to 26·85 per 1,000 of population, which is 2·37 per 1,000 lower than in 1884 and 7·28 per 1,000 than the mean of the lustrum 1880-84. Nuddea, however, still heads the list of fever-stricken districts this year. An examination of the mortuary statistics of the circles which compose the district individually shows that those named in the margin presented this year, the Nobodip town excepted, considerably lower death-rates than since 1880, when the fever began to be epidemic in the district; while the undermentioned circles exhibited no abatement as compared with either all the years under notice or with some of them. The figures for the years which show lower mortality are in antique type in this table :—

		Ratio per mille in 1885.	Range of mortality between 1880 and 1884.
SUDDER SUB-DIVISION.	Hanskhalli thana ...	29·81	37·38 to 61·07
	Nakashipara „ ..	22·85	31·45 „ 45·86
	Kaligunge „ ...	24·33	29·63 „ 74·27
	Kishengunge „ ...	25·99	28·92 „ 61 29
	Kishnaghur „ ...	18·82	25·90 „ 46·37
	Do. town ...	12·81	21·61 „ 51·01
	Chapra thana ...	18·95	20·78 „ 48·73
	Nobodip town ...	18·50	14·08 „ 15·38
RANAGHAT SUB-DIVISION.	Ranaghat thana ...	23·46	25·47 „ 32·74
	Santipore „ ...	25·47	28·82 „ 36·97
	Ranaghat town ...	5·64	19·92 „ 31·22
	Santipore „ ...	7·88	17·01 „ 33·10
CHUADANGA SUB-DIVISION.	Chuadanga thana ...	30·57	32·95 „ 69·50
	Jebannagore „ ...	26·42	28·73 „ 42·49
MEHERPORE SUB-DIVISION.	Tehatta „ ...	24·70	26·81 „ 46·66
	Meherpore town ...	12 03	22·33 „ 57·53

SUB-DIVISIONS.	Circles.	RATIO PER MILLE DURING—					
		1885.	1884.	1883.	1882.	1881.	1880.
RANAGHAT ...	Jaguli thana	28·19	37·72	29·18	28·74	***20·83***	29·57
	Chagda „	29·38	30·81	***26·95***	***25·76***	***22·86***	***18·18***
KUSHTEA ...	Nowpara „	30·75	***29·68***	***29·15***	***21·88***	46·05	32·86
	Kumarkhalli „	27·15	29·04	***24·93***	***15·19***	***22·42***	***17·56***
	Kushtea „	30·01	***28·31***	***23·86***	***21·38***	33·70	***20·83***
	Daulutpore „	35·61	***28·08***	***27 05***	***24·81***	***19·71***	***17·69***
	Bhaluka „	32·60	***25·87***	***24·85***	***18·96***	***28·33***	***28·76***
	Bhadulia „	28·76	***24·97***	***21·88***	***15·78***	***25·55***	***20·24***
	Kushtea town	11·01	12·55	12·65	12·14	***7·46***	***9·95***
CHUADANGA ..	Kalupol thana	37·41	39·64	***26·11***	***35·40***	50·06	***30·71***
	Alumdanga „	34·97	***34·59***	***26·87***	***26·52***	35·73	***24·99***
	Damurhuda „	27·70	32·97	28·02	46·56	32·67	***18·74***
MEHERPORE ...	Meherpore „	28·61	32·17	***27·15***	32·41	100·93	157·88
	Gangni „	29·55	***28·04***	***28·40***	33·09	38·55	***26·72***
	Karimporo „	26·22	***23·04***	***23·11***	***24·03***	33·72	***23·60***

The figures in the above tables indicate (1) that while on the one hand the mortality had diminished during the year under review in *all* the circles of the Sudder sub-division, Nobodip town excepted, in comparison with the casualties in *all* the five years 1880-84 during which the fever prevailed epidemically, on the other hand the circles in the Kushtea sub-division exhibited enhanced mortality in comparison with the death-rates of one or more of the years above referred to, thanas Doulatpore, Bhaluka and Bhadulia showing exacerbations in comparison with the mortality in all the five years; (2) that in the Ranaghat sub-division four against two circles, in the Chuadanga sub-division two against three circles, and in the Meherpore sub-division also two against three circles exhibited improvement; and (3) that on the whole most part of the district may be said to have regained its normal health standard, excepting the circles where the registration is evidently defective, the health condition of which cannot, for this reason, be determined one way or the other. This improvement in health generally is ascribed to natural causes, the chief of which is the extensive inundation which occurred in August and September, submerging a large tract—1,000 square miles—in the district. It is said, however, that the great epidemic of 1880 was preceded by an inundation which occurred in 1879. The personal observations of Assistant Surgeon Preamber Mitter, Deputy Superintendent of Vaccination, Metropolitain Circles, go to show that the floods of the year had the effect of greatly warding off the fever in this district in comparison with its incidence during past years. I should add to the above causes the small improvements that have been effected in the district, particularly in connection with drainage. The inundation submerged the north of the Ranaghat sub-division and the whole of the other sub-divisions. I quote in the margin the fever mortality for the months of October, November and December in these sub-divisions during 1885 and 1884. The figures indicate that considerable reduction of mortality followed as a sequence to the inundations wholly in the Sudder and Ranaghat sub-divisions and partly in the others. The Civil Surgeon observes that "it is extremely satisfactory to find that the towns have now attained the standard of health they enjoyed during years prior to visitation of the epidemic." He ascribes this improvement to purer water-supply having been provided for, and to the higher standard of living which obtains in them. With reference to this observation, the Magistrate remarks that the registration in the former area being in the hands of the Municipalities is not so regularly done as in the rural areas, where the Police receive regular reports from the chowkidars. I am also of opinion that the registration in the urban circles is defective, particularly in the towns of Ranaghat, Santipore, Kushtea, and Meherpore, where the mortality from all causes was recorded at 8·63, 13·27, 24·90 (including 9·15 for cholera), and 16·92 per 1,000 of population, respectively. Moreover, the improvement in the towns must have been participated by their surrounding rural areas, and yet the latter have not returned such abnormally low death-rates. The Deputy Magistrate of the Chuadanga sub-division, who, the Magistrate states, "is an officer of great experience and whose remarks may be accepted with confidence," reports that the prevalence of fever in his sub-division appeared to be due to deficient water-supply compelling the people to use for drinking and domestic purposes filthy water, they being too poor to excavate tanks for themselves; to the drainage being bad; and to the dwellings, including even those of some of the zemindars and higher ranks of the people, being filthy in the extreme, abounding in jungle and noxious vegetation. He endeavoured in vain to induce the rich and well-to-do to take taccavi loans for the purpose of improving the water-supply in their respective villages, as they "decline to look forward beyond the four corners of their own dwellings in the sphere of their own interests;" and he advocates compulsory measures, without which he is of opinion that sickness and mortality cannot be minimised. The sub-divisional officer of Meherpore also quotes the same causes and deficiency of wholesome food as accounting for the prevalence of fever in his

		October.	November.	December.
Sudder ...	1885 ...	2·18	2·10	1·80
	1884 ...	2·36	2·84	3·14
Kushtea ..	1885 ...	3·21	3·92	3·28
	1884 ...	2·73	3·47	3·55
Chuadanga ..	1885 ...	3·77	3·67	2·68
	1884 ...	3·48	3·87	3·90
Meherpore ...	1885 ...	2·98	2·77	2·19
	1884 ...	2·84	2·90	2·77
Ranaghat ...	1885 ...	1·44	2·01	2·11
	1884 ...	2·54	4·49	4·89

sub-division which he says occurs biennially, once in the beginning of the cold weather when the floods subside, and again in the hot weather when the people are without wholesome water. He adds that this year the fever has been worse than usual (the statistics do not quite support this) owing to the weather having been exceptionally hot, and to a series of bad grain harvests having resulted in a diminished food-supply which rendered the people liable to succumb to disease. The sanitary condition of the Kishnaghur town is thus described: "It is an old overgrown straggling town, ill-arranged, and not lending itself readily to sanitary improvements. Its natural drainage has been interfered with by changes in the river-bed described in last year's Report; artificial drainage is still in an embryo stage; the soil is water-logged and riddled with ancient and existing privy shafts."

127. *Jessore.*—The mortality from fever in this district, although somewhat lower than in the preceding year, was still high, as it amounted to 21·44 per 1,000 of population; and the area occupied by the disease was greater, the excess being represented by 8·01 per cent. of villages Of the 22 circles in the district, so many as 18 returned exceptionally high death-rates (*vide* figures in the margin). It is to be regretted that the local officers have not been able to submit any explanation regarding the severe prevalence of the disease in this district. It is only said that "no disease could be traced to the floods." It appears that the whole of this district was inundated; the Bongong sub-division in August and September, the Magura sub-division in September, and the Jhenidah, Narail and Sudder sub-divisions in September and October. The fever mortality subsequent to the occurrence of the floods stands as indicated in the margin, contrasted with the death-rates of the corresponding period of 1884. The figures show a considerable reduction in mortality in all the sub-divisions excepting Jhenidah and Narail, indicating that on the whole the inundation did reduce much of the suffering. Dr. ffrench-Mullen, the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, reports that in village Patabuk, thanna Gaighatta, people were still dying from the effects of the fever which prevailed in it a few years ago, and that in village Sripur, in the same thana, the people are still continuing to suffer from this fever.

	Ratio per mille.		*Ratio per mille.*
Harinakunda thana ..	33·89	Kaligunge thana ...	22·27
Sarsha „ ...	29·61	Salukha „ ...	21·93
Jenidah „ ...	23·61	Moheshpur „ ...	21·32
Kotchandpur „ ..	22·95	Godkhalli „ ...	21·03
Jessore town ...	22·83	Lahagura „ ...	20·70
Bagarpara thana ...	22·67	Kotwalli „ ...	20·35
Salkopa „ ...	22·63	Manirampore „ ..	19·97
Gaighatta „ ...	22·57	Muhamadpur „ ...	19·85
Magura „ ...	22·46	Bongong „ ...	19·44

		October.	November.	December.
Bongong ...	1885 ...	1·94	2·74	1·99
	1884 ...	2·62	3·97	3·99
Magura ...	1885 ...	2·11	2·90	3·20
	1884 ...	2·34	3·44	3·49
Jhenidah ...	1885 ...	...	3·71	3·08
	1884 ...	...	3·57	2·85
Narail ...	1885 ...	...	2·71	3·66
	1884 ...	...	3·37	2·97
Sudder ...	1885 ...	...	2·54	2·22
	1884 ...	...	2·99	3·02

128. *Khulna.*—In this area a considerably larger extent of country was overrun by the disease, the increase being represented by 15·12 per cent. of the villages; but the mortality, in addition to being somewhat lower than in 1884 and in the lustrum 1880-84, was not excessive amounting to 18·15 per 1,000 of population. The circles marginally cited presented the highest death-rates. It is stated that the head-quarters of the Sudder sub-division is the most unhealthly place in the district, and that here the Government officials and the Police Officers are the chief sufferers. Dr. Ghose, the Civil Surgeon, is of opinion that the great cause of fever in Khulna is stagnation of ground moisture. He writes: "Wherever fresh water flows freely and does not stagnate there fevers are rare; but show me *bhils* from which *khals* inefficiently discharge the water, and I will show you fevers and spleen disease throughout the year in the surrounding villages, and I would say *vice versâ.*" It was noticed that no outbreak of disease followed the inundation in the sub-division of Satkhira—the only area in Khulna which was submerged. The mortality in this sub-division, during the months of October, November and December, stood at 1·96, 2·23, and 2·07 per 1,000 of population, respectively,

	Ratio per mille.		*Ratio per mille.*
Magurah thana ...	28·88	Satkhira thana ...	20·57
Kalarooah „ ...	22·54	Dumuriah „ ...	19·49
Assasuni „ ...	21·11	Paikgacha „ ...	19·48

against 1·74, 2·57, and 2·69 per 1,000 during the same months in 1884. These figures do not fully support the above statement.

129. *Murshidabad.*—Here both the prevalence and fatality of the disease had diminished to some extent in comparison with its incidence in 1884 and in the quinquennium 1880-84; but the mortality, which amounted to 19·56 per 1,000 of population, was still high. The areas of highest mortality, numbering 14 out of 27 in the district, are exhibited in the margin. It was observed that, although the fever prevailed with great severity, it was the effects of its *sequelæ*—enlarged spleen and liver, sloughing of the face, general dropsy, &c.—which caused most suffering to the poor, and that this was aggravated by their being compelled, owing to scarcity, to live on bad food. The Magistrate notes that after the inundation there was less fever prevalent than was expected; that village Khargram, in the thana of the same name, which has a notoriety for unhealthiness, was exempt from the malarious fever from which it had suffered severely last year; and that in fact the district was unusually healthy this year, the heavy floods, notwithstanding the hardships they entailed, having rather prevented than induced disease. The areas influenced by the inundation which occurred in the latter part of August, were the Jungipore, Lalbagh and Sudder sub-divisions. The comparative death-rates in these sub-divisions during October to December are given in the margin. These figures, on the whole, support the Magistrate's opinion.

	Ratio per mille.		*Ratio per mille.*
Asanpur thana ...	31·13	Bhugwangola thana	22·86
Dewanserai „ ...	25·78	Sagordighi „ ...	21·96
City Murshidabad ...	24·49	Dowlutbazar „ ..	21·40
Jellinghi thana	24·22	Kaliangunge „ ...	21·01
Raghunathgunge „ ...	23·29	Sujagunge „ ...	20·73
Manulabazar „ ...	23·24	Shahanagore „ ...	20·58
Shumshergunge „ ...	22·93	Nawada „ ...	19·11

		October.	November.	December.
Jungipore ...	1885 ...	2·87	2·20	1·48
	1884 ...	2·29	2·46	1·74
Lalbagh ...	1885 ...	2·14	1·94	1·63
	1884 ...	1·97	2·81	2·08
Sudder ...	1885 ...	2·52	2·10	1·58
	1884 ...	2·14	2·88	2·32

130. The statistics of the Rajshahye Division of Bengal, presented in the margin, show that fever pervaded during the year under notice in larger tracts in four of its districts—Bogra, Pubna, Darjiling, and Julpaiguri—and smaller ones in three—Dinajpur, Rajshahye and Rungpore—in comparison with its incidence in the preceding year; and that while Pubna and Rajshahye returned very high death-rates and the returns furnished by Julpaiguri, Rungpore and Bogra do not indicate that they experienced a healthy year for fever, Darjiling and Dinajpur enjoyed much comparative immunity from the disease. The immunity of Dinajpur, however, is owing to defective registration. In comparison with 1884 all the districts, except Rajshahye and Pubna, exhibit increased death-rates, and in contrast with the lustrum 1880-84 all but Rajshahye an increase. In seasonal fatality there is seen much variation with regard to the months of greatest prevalence of the disease; but the winter months proved unhealthy in all the districts excepting in Darjiling, where the severity of the disease prevailed severely, contrary to its demeanour in the other districts, during July to September.

Fever prevalence in the Rajshahye Division.

Districts.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Dinajpur	82·34	3·24 *D*	17·88	1·74 *I*	·60 *I*	November and December.
Rajshahye	79·60	14·82 *D*	24·03	6·37 *D*	3·12 *D*	January to May, October to December.
Rungpore	60·82	5·82 *D*	22·72	5·63 *I*	8·37 *I*	September to December.
Bogra	69·89	·73 *I*	21·21	·25 *I*	2·37 *I*	January to April, November and December.
Pubna	73·21	4·61 *I*	25·63	1·82 *D*	8·46 *I*	January to May, October to December.
Darjiling	32·13	3·50 *I*	11·14	2·68 *I*	5·55 *I*	July to September.
Julpaiguri	90·00	10·43 *I*	23·71	5·46 *I*	9·43 *I*	January to March, May and October to December.
Total ...	72·68	3·31 *D*	22·19	·94 *I*	4·46 *I*	January to March, October to December.

131. *Dinajpur*—In the Report for 1884 it was stated that the mortality from fever in this district had been steadily declining since 1878 when it stood at 21·41 per 1,000 of population; but this year the decline was not continued, for the death-rate amounted to 17·88 per 1,000 as opposed to 16·14 per 1,000 in 1884, and 17·28 per 1,000 during the quinquennium 1880-84. The casualty

rate of the year is not, however, conspicuously high. The circles which returned the highest death-rates are indicated in the margin. All these circles excepting Nawabganj, are lowlying tracts. There was no inundation of consequence, and the Magistrate notes that it appears to him that the abnormal rainfall of the year increased the mortality from fever, but the rainfall amounted to 62·08 inches against 61·32 inches, the average of preceding years.

	Ratio per mille.		Ratio per mille.
Patbatipore thana ...	22·54	Gungarampore thana	19·85
Pirganj " ...	21·60	Nowabganj " ...	19·19
Chintamon " ...	20·15	Birganj " ...	19·08

132. *Rajshahye.*—In 1884 this district suffered pre-eminently in comparison with all the other districts in the Province. It is very gratifying to record that a very considerable diminution took place during this year in both the extension and fatality of the disease, as there was a decrease in the number of villages attacked to the extent of 14·82 per cent. of the total villages in the district and in the death-rate of 6·37 per 1,000 of population as compared with 1884 and 3·12 per 1,000 as contrasted with the lustrum 1880-84, the total casualty rate of the year amounting to 24·03 per 1,000. This mortality is, however, still high, and all the circles in the district, excepting Beauleah town and Panchpore thana, presented noticeably high death-rates (*vide* marginal figures). Dr. Cameron, the Civil Surgeon, observes that the prevalence of fever in the district this year was as great as during the past few years, as evidenced by the signs of malaria exhibited by the people, such as debility, watery blood, anæmia, enlargement of spleen, general dropsy, &c. The causes of its prevalence have been furnished in my Report for 1884 and need not, therefore, be recapitulated here. The reduction in the mortality is ascribed to the inundations. They occurred in July, continued through August and September and subsided in October, and submerged portions of thanas Beauleah, Singra and Panchpore, and the whole of thanas Charghat, Lalpore, Burigram, Putea and Tanor. These thanas are situated in the Sudder and Nattore sub-divisions, and an examination of the statistics of these sub-divisions yields the results given in the margin. They indicate a very considerable diminution of mortality during September, October, November and December of this year as compared with the casualty rates of the same months of 1884.

	Ratio per mille.		Ratio per mille.
Nattore thana ...	29·73	Singra thana ...	23·43
Beauleah " ...	26·22	Tanor " ...	23·21
Burigram " ...	26·08	Manda " ...	22·38
Putea " ...	25·77	Naugaon " ...	21·66
Lalpore " ...	24·57	Bagmara " ...	21·65
Charghat " ...	24·51	Godagari " ...	19·52

		Ratio per mille.			
		September.	October.	November.	December.
Sudder ...	1885 ...	1·47	1·81	2·35	1·75
	1884 ...	2·54	3·09	4·54	2·94
Nattore ...	1885 ...	1·36	1·81	2·94	2·54
	1884 ...	1·56	2·40	4·51	3·91

133. *Rungpore.*—In this district with a decrease in the extension of the disease was associated a very considerable increase of mortality. The death rate amounted to 22·72 per 1,000 of population, which exceeds that of 1884 by 5·63 per 1,000 and that of the lustrum 1880-84 by so much as 8·37 per 1,000; and all the circles in the district, excepting Dimla and Bhowaniganj, exhibited noticeably high mortality, as will appear from the marginally-cited figures. It was noticed that fresh cases of the disease were rare after October, and that very large numbers suffered from the usual sequelæ of the disease and relapses were common.

	Ratio per mille.		Ratio per mille.
Mahiganj thana ...	31·69	Nageswari thana ...	22·77
Rungpore town ...	31·08	Govindganj " ...	22·70
Kumarganj thana ...	27·51	Sadullapore " ...	21·98
Kaliganj " ...	26·43	Sunderganj " ...	21·69
Ulipore " ...	24·52	Jaldaka " ...	20·78
Nishutganj " ...	24·31	Hurabari " ...	19·14
Mitapukur " ...	23·06	Darwani " ...	19·10
Pirganj " ...	22·65		

As the great unhealthiness of this district calls for notice, I am glad that the Civil Surgeon, Dr. Dutt, paid much attention to its circumstances so as to throw some light on its fever history. He visited Ulipore, Kaliganj and Mahiganj thanas which, as shown above, suffered very severely. "They," he says, "represent the depressed basins between the rivers and contain a number of small river tributaries, more or less choked by weedy growth and encroached upon by fishing weirs. The communication of these waterways with the *bhils*, which abound in these places, is considerably impeded and in some places obstructed. They remove the spill water from the *bhils* with

great difficulty during the rains. Jungle and rotting vegetation in stagnant pools abound in consequence." He also travelled in various parts of the district inspecting the dispensaries, and the following notes taken from his observations on the drainage and food-supply of the country may be found useful as indicating what might be done in these directions for this notoriously malarious district: "The natural drainage and the agricultural status of the district are," he says, "the principal features of sanitary importance. The district is a vast level of country drained principally by the Dhurla, Sankosh, and Teesta rivers. The tracts lying between the rivers and the principal tributaries, are depressions or basins, generally water-logged, where the greatest impediment to drainage occurs. Hence, there exists, following the lines of lowest levels, numerous water-courses expanding to *bhils*. The Kurotoya, Ghagat and Manas, tributaries of the Teesta, which used formerly to discharge the flood of the Teesta and drain the south-western portion of the district, are now so silted up and obstructed that they only take off the spill water of the bhils or marshes lying in their course. Embankments and fishing weirs and other artificial impediments are gradually reducing these streams and water-courses. As the drainage became gradually obstructed, in the same ratio the country became unhealthy; and this state of matters continues up to the present time." Dr. Dutt suggests as a remedy the re-opening of the existing water-courses and their preservation from artificial interference. Referring to the subject of food-supply, he writes: "There are great facilities for improving the agricultural status of Rungpore and much is being done in this direction. The soil is so fertile that it does not require much manure. It is humid and damp and requires no irrigation. It depends upon the rainfall for its supply of water, yet in a year of drought well irrigation is easy, cheap and sufficient. Still with all these advantages cereals are grown scantily, and *dals*, wheat and Indian corn, which will grow to any extent, are not cultivated although there is no lack of suitable land. Pasture lands are diminishing yearly, and, as a consequence, the breed of cattle is fast degenerating. Thus the defect in the food of the people is want of nitrogenous substances in the shape of cereals, milk, fish, flesh, &c., which calls for remedy."

The Rungpore town suffered severely from fever, and it was noticed that more than 50 per cent. of the inhabitants were attacked by the disease. The unhealthiness of this town is attributed by the Civil Surgeon to impeded drainage caused by the obstruction of the old bed of the Ghagat river and the new drainage canal, to interruption in the working of the surface drains by earthen dams made to serve as entrances to house premises, and to the insufficiency of the waterways which, he says, if not remedied in time, will aggravate the prevalence of fever year after year. He remarks, moreover, the prevailing winds which sweep over the bad *bhils* connected with the Alakuri and Manas rivers before reaching the town contribute, to some extent, to its unhealthiness; and very pointedly says that "in another place not enjoying the unenviable notoriety which Rungpore has attained for unhealthiness, there would have been, in spite of a large medical establishment, an outcry for preventive and medical measures." I am also impressed with the above views from what I saw during my inspection of this town this year. Its sanitation has been greatly neglected, grave defects existing almost under every head, so much so that, notwithstanding the great improvement in drainage which had done great good, the total death-rate rose from 28·15 per 1,000 of population in 1884 to 40·61 per 1,000 in 1885, fever taking a prominent part in causing this high mortality. The chief defects calling for early rectification will be found narrated on page liv, Appendix IV to this Report.

134. *Bogra.*—The death-rate from fever in this district was 21·21 per 1,000 of population, which rate exceeds that of the preceding year by ·25 per 1,000 and of the quinquennium 1880-84 by 2·37 per 1,000. Excepting Shariakandi and Adumdigi, all the other circles in the district presented high mortality (*vide* marginal figures). The sanitary reports do not furnish any account of the incidence of the disease in this district, excepting that the Civil Surgeon

	Ratio per mille.		*Ratio per mille.*
Sherpur thana ...	28·14	Nowabgunge thana	22·95
Panchbibi " ...	24·65	Sibganj "	22·27
Dhunut " ...	23·79	Bogra "	21·20
Bogra town ...	22·98	Khettal "	19·43

observes that the fever prevailed most during the hot and winter months and least during the rains, and that the heavy mortality of the first quarter of the year was referable to the scanty rainfall of the preceding year.

135. *Pubna.*—In the Report for 1884 the Civil Surgeon remarked that the unhealthiness of this district, commencing from 1880, had reached culminating point in that year. The fever of the year under review, although less fatal, appears to have made a much further advance in the district, for the area invaded by it is represented by 73·21 per cent. of the villages against 68·60 per cent. while the death-rate stood at 25·63 per 1,000 of population against 27·45. But, this mortality compared with that of the lustrum 1880-84, shows a considerable increase, viz. of 8·46 per 1,000. As in 1884 so in this year, this district occupies the third place on the list of fever-stricken districts in the Province. In all its circles the fatality of the disease was conspicuously great, as will be seen from the marginal figures. In my Report for 1884 the causes of the unhealthiness of the district has been submitted, so I need not reproduce them here. In the Serájgunge town the disease prevailed very severely among the employés in the jute mills, prostrating 35 per cent. of them. The sanitary arrangements of this town are said to be most unsatisfactory. According to the Sub-divisional Officer the fever of the continued, remittent and intermittent types, which commenced in his Sub-division in 1883 and which had been gradually increasing since, assumed epidemic proportions from July of this year. But the death-rates of Raigunge, Shazadpore, Serajunge and Ulapara, which compose the sub-division, do not uphold this statement. The whole of this district, excepting its northern frontier, where Ulapara, the last in the above list, is situated, was inundated. The effect of the flooding, as judged by the marginal figures, was very beneficial, as the fever mortality appears to have been greatly reduced by it.

	Ratio per mille.		Ratio per mille.
Serajgunge town ...	39·73	Shazadpore thana	25·23
Chatmohur thana ...	30·64	Serajgunge „ ...	23·52
Dulai „ ...	29·57	Mathura „ ...	23·46
Pubna „ ...	26·28	Pubna town ...	20·69
Raigunge „ ...	25·78	Ulapara thana ...	19·71

	October.	November.	December.
	Ratio per mille.		
In 1885	2·02	2·66	3·19
„ 1884	2·72	4·30	3·68

136. *Darjiling.*—Fever appears to have prevailed in this district much more extensively and fatally, as 3·50 per cent. additional villages were invaded by the disease, and the mortality was higher by 2·68 per 1,000 of population as compared with 1884, and by 5·55 per 1,000 as compared with the lustrum 1880-84. The total mortality stood at only 11·14 per 1,000, but this fact, and the fact that in only the Kurseong thana the death-rate was conspicuously high, amounting to 20·56 per 1,000, should not be accepted absolutely, as the registration in this district, although improving, is still very defective. The Deputy Commissioner notes that fever prevailed much in the Teesta and Runjeet valleys, in part of Pulbazar, in Guridhura and in Panighatta, these being the most unhealthy localities in the district.

137. *Julpaiguri.*—The records of this district for 1884 showed that both the prevalence and fatality of the disease had considerably increased in comparison with its incidence in 1883, but those of the year under review exhibit a further and greater enhancement. The percentage of villages in which the disease prevailed amounted to 90 against 79·57 in 1884 and 89·95 in 1883, and the death-rate was 23·71 per 1,000 of population as opposed to 18·25 in 1884 and 13·40 in 1883. The mortality of 1885 contrasted with that of the lustrum 1880-84 shows that an additional 9·43 per 1,000 of the population died. Excepting the Julpaiguri town, every circle in the district returned exceptional casualty rates, as will be apparent from the marginal figures. Dr. Ashe, the Civil Medical Officer, ascribes the prevalence of the fever to the water-logged condition of the district "in which malaria is endemic;" to local insanitary conditions; to the people living in crowds in ill-ventilated huts; to polluted water-supply; and to the prevailing climatic conditions, the ranges of temperature in

	Ratio per mille.		Ratio per mille.
Julpaiguri thana ...	29·55	Patgram thana ...	22·66
Mynaguri „ ...	27·10	Alipore „ ...	21·50
Salbari „ ...	24·79	Siliguri „ ...	20·40
Boda „ ...	23·47	Kairanti „ ..	18·95

the 24 hours being very great. The mortality, he says, is great because the people are unwilling to seek medical assistance till their cases have become hopeless, as the fever in this district (of the usual malarious type) is easily amenable to treatment if taken early in hand; but if unattended to, it terminates fatally by asthenia; and, moreover, if the usual complications associated with it, such as dropsical effusions, dysentery, or diarrhœa, supervene, death quickly follows. He adds that the disease is low immediately before and diminishes in the height of the rains to increase and become virulent and highly fatal after their cessation.

138. The statistics of the Dacca Division of Bengal, marginally tabulated, indicate that, with a slightly enhanced prevalence of the disease in Backergunge, there was a decline in the other three districts, Dacca exhibiting a very sensible reduction; that the mortality was low in all the four districts; that in comparative fatality, lower death-rates were returned by Dacca, Faridpore and Backergunge, particularly by the last-named district, and a higher one by Mymensing in comparison with the fatality of the disease in 1884; but that in relation to the death-rates of the lustrum 1880-84 all four districts show an increase, Mymensing the largest; and that the months of greatest prevalence of the disease were generally January, April and October to December, excepting that in Backergunge March took the place of April and that in Mymensing the highest fatal results were limited to October, November and December.

Incidence of Fever in the Dacca Division.

Districts.	Percentage of Villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Dacca	46·03	22·18 *D*	12·86	·51 *D*	·45 *I*	January, April, September to December.
Faridpore	48·89	·90 *D*	11·69	·12 *D*	2·13 *I*	January, April, October to December.
Backergunge ...	61 27	·30 *I*	14·37	1·09 *D*	2·23 *I*	January, March, May, September to December.
Mymensing ...	46·61	3·85 *D*	10·06	1·38 *I*	3·93 *I*	October to December.
Total ...	48·92	7·36 *D*	11·99	·10 *I*	2·08 *I*	January, April, October to Decmber.

139. *Dacca.*—The mortality from fever in this district reached only 12·86 per 1,000 of the population against 13·37 per 1,000 in the preceding year, and 12·41 per 1,000 in the quinquennium 1880-84, and only the Harirampore, Jaffergunge and Manickgunge thanas exhibited anything like noticeable suffering, the death-rates returned by them being 22·32, 20·29 and 16·52 per 1,000 against 25, 22·66 and 17·08 per 1,0C0 in 1884. Notwithstanding the great similarity in the mortality during this and the preceding year, the Civil Surgeon and also the Magistrate have no doubt that there was less fever this year, particularly in the malarious circles, such as the Manickgunge sub-division. Nevertheless, the thanas in this sub-division—Harirampore, Jaffergunge and Manickgunge—still head the list of fever-stricken areas in this district. The causes have been frequently explained in the reports of former years, and need not be recapitulated here.

140. *Faridpore.*—In this district also the prevalence and fatality of fever were low. The death-rate stood at 11·69 per 1,000 of population, being ·12 per 1,000 below that of 1884, and 2·13 per 1,000 that of the lustrum 1880-84, and only the Belakandi thana and Faridpore town presented high casualty rates—23·31 and 18·02 per 1,000 of population respectively. The Magistrate says that during the entire rainy season almost the whole of the Madaripore sub-division and thana Muksudpore in the sudder sub-division suffered a great deal from fever. This he ascribes to the heavy inundation; but the returns show that, in these areas as well as in the district generally, the cold weather months exhibited the greatest mortality, particularly December, and the Magistrate himself notes in another part of his report that owing to this cause the registration in the Bhanger thana was nearly stopped. The inundation above referred to by the Magistrate is evidently the submersion of the district which usually takes place during the rainy season, for the inundation which was common to Bengal occurred in September which, according to the Civil Surgeon, although not so great as in the neighbouring districts of Murshidabad, Nuddea and Jessore, rose unusually high. The exact areas which were flooded have

not been named, but there is no doubt from the account furnished that the whole of the Goalundo sub-division was affected. Taking this sub-division therefore as a typical area, it will be seen from the figures in the margin that the inundation proved, on the whole, beneficial to it.

		Ratio of deaths per *mille.*		
		October.	November.	December.
Goalundo ...	1885 ...	·97	1·69	1·98
	1884 ...	1·22	1·67	2·33

141. *Backergunge.*—Here, with an increase in the area pervaded by the disease, there was associated a decrease of mortality compared with the preceding year, but an increase contrasted with the quinquennium 1880-84. The figures are—percentage of villages affected 61·27 against 60·97 in the preceding year, and death-rate 14·37 per 1,000 of population against 15·46 per 1,000 in 1884, and 12·14 per 1,000 in the lustrum 1880-84. Only the Barisal, Medhigunge, and Gulachipa thanas returned high death-rates, viz. of 20·89, 20·01 and 18·86 per 1,000 of population. The fevers of this district are stated to be chiefly of the quotidian type, easily amenable to treatment, and not very fatal, enlargement of the spleen being rare.

142. *Mymensing.*—In this district the death-rate from fever amounted to 10·06 per 1,000 of population, the lowest of all the districts in the Dacca Division, but higher by 1·38 per 1,000 as compared with the mortality in the preceding year, and by 3·93 per 1,000 as contrasted with that in the lustrum 1880-84. The disease was, however, less extensively diffused, and the Civil Surgeon is of opinion that the increase in the death-rate is accounted for by improving registration rather than by increasing unhealthiness. In only two of the circles was the mortality noticeably high, viz., in Pingna thana and Attia town, which returned death-rates of 28·36 and 27·42 per 1,000 of population respectively. It is said that the great majority of the people in this district present malarial blue gum and enlargement of the spleen and that their physique is poor, the average weight of the men being only about 103lb.

143. The marginal figures, relating to the incidence of fever in the three districts—Chittagong, Noakhalli and Tipperah—in the Chittagong Division of Bengal, show that the disease prevailed less extensively but was more fatal in all of them than in both the preceding year and the quinquennium 1880—84; that it did not, however, exhibit excessive severity in any of them; that relatively Noakhalli returned the highest death-rate; and that, on the whole, the unhealthiest months were January and October to December.

Incidence of Fever in the Chittagong Division.

Districts.	Percentage of villages attacked in 1884.	Increase or decrease as compared with 1884.	Ratio of deaths per *mille.*	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880—84.	Months of greatest prevalence.
Chittagong... ...	75·97	10·43 *D*	13·39	3·02 *I*	1·97 *I*	January, May, June, August to December.
Noakhalli	68·43	4·69 *D*	16·42	·61 *I*	1·43 *I*	January March, September to December.
Tipperah	63·40	6·60 *D*	12·23	1·36 *I*	5·08 *I*	January to March and November and December.
Total ...	66·33	6·63 *D*	13·60	1·73 *I*	2·36 *I*	January, August, October to December.

144. *Chittagong, Noakhalli, Tipperah.*—The demeanour of the disease in all these districts was similar. Although the mortality was low, it was more severe during the year under review than during the years with which comparison is instituted in the above table. Chittagong returned a death-rate of 13·39 per 1,000 of population in 1885 against 10·37 per 1,000 in 1884 and 11·42 per 1,000 during the lustrum 1880-84; Noakhalli 16·42, 15·81 and 14·99; and Tipperah 12·23, 10·87 and 9·15 per 1,000, respectively, during the three periods above mentioned. In Tipperah the death-rate was not exceptionally high in any of its circles, and in Chittagong and Noakhalli only the few circles named in the margin furnished such rates.

Chitagong.	*Ratio per mille.*	*Noakhalli.*	*Ratio per mille.*
Hathazari thana ...	17·63	Hatia thana ...	21·26
Chittagong town ...	17·48	Bamni „ ...	19·84
Maskal thana ...	17·01	Chagulniah „ ...	19·39

The local reports received from *Chittagong* do not again furnish any information relating to the incidence of

the disease in it. Referring to the causation of fever in *Noakhalli*, the Civil Surgeon states that the disease becomes more general immediately after the cessation of the rains, and this is referred to sub-soil emanations arising from decomposed vegetation and other substances after the rains owing to the whole country having been more or less under water; that this unhealthiness not only continues during the drying up process, but is also kept up, though in a less degree, by the presence of sub-soil water even when the surface water has disappeared; that the other causes are that all the waterways in the interior of the district are silting up and drainage is obstructed for want of outlets; that in the north-west of the district there are large swamps; and that the water-supply is bad owing to the tanks falling low during the dry weather. A noticeable fact reported from *Tipperah* is that fever of a bad type broke out in the large village of Dhamti in thanna Moradabad, attacking 66 persons during September and October, but causing only one death. This village is situated amidst swamps and low ground; it abounds in jungle, and the drinking water is taken from tanks overgrown with weeds.

BEHAR.

145. In Behar 377,718 casualties from Fever were recorded during the year among its population estimated at 23,127,104, and in 64·98 per cent. of its villages, and the death-rate in relation to population was 16·33 per 1,000. In the preceding year there occurred 301,332 deaths in 62·55 per cent. of the villages, or at 13·02 per 1,000 of population, and during the lustrum 1880-84, 257,925 deaths, or at 11·15 per 1,000. This record demonstrates that both in extension of prevalence and fatality the disease exhibited considerable enhancement this year. There was again more fever and its fatality was greater in Behar than in any other Division in the Province, Bengal excepted. In seasonal incidence, the mortality was low in January and February, commenced to increase in March and prevailed at high, but varying, rates up to the end of the year, October and November being, in equal degree, the worst months. Almost the same features characterized the demeanour of the disease in 1884.

Incidence of Fever in the Behar Division of the Province.

146. The statistics illustrating the incidence of fever in the districts in the Bhagulpore or Eastern Division of Behar are presented in the margin. They denote that while in point of extension a larger number of villages were attacked by the disease in Sonthal Pergunnahs, Maldah and Purneah, and a smaller number in Monghyr and Bhagulpore, (in the order named,) in point of mortality all the five districts exhibited enhanced fatal results as compared with the death-rates of both the periods with which comparison is instituted in the marginal table; that in relative fatality Monghyr suffered in the greatest degree, Bhagulpore in the next, Sonthal Pergunnahs in the least, and Purneah and Maldah intermediately; and that in seasonal incidence the months of marked mortality were generally August to December, excepting that in Purneah and Maldah the disease prevailed much the same as it does in Lower Bengal, the principal feature being that the rainy months were the healthiest.

Incidence of Fever in the Bhagulpore (*East Behar*) Division.

DISTRICTS.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of deaths per *mille*.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880—84.	Months of greatest prevalence.
Monghyr	75·75	16·37 *D*	25·65	12·24 *I*	14·78 *I*	March, August to December.
Bhagulpore ...	76·30	9·37 *D*	23·13	6·79 *I*	10·24 *I*	Ditto.
Purneah	97·14	·65 *I*	19·22	3·16 *I*	3·01 *I*	January, March, October to December.
Maldah	83·36	5·15 *I*	17·95	2·11 *I*	1·21 *I*	January, April, October to December.
Sonthal Pergunnahs.	69·96	12·49 *I*	13·22	·97 *I*	3·33 *I*	July to December.
Total ...	77·10	2·25 *I*	20·46	6·74 *I*	7·55 *I*	March, August to December.

147. *Monghyr.*—The great rise in the fever death-rate in this district, viz. from 13·41 per 1,000 of population in 1884 to 25·65 per 1,000 in this year is no

doubt due to better registration under the zealous and unremitting attention bestowed on the subject by Major Ramsay, the Superintendent of Police in this district, allusion to which has already been made in paragraph 8, page 3, of this Report. This improvement, it will be seen from the marginal figures, was shared by every circle in the district. No account has been furnished in the local reports relating to the prevalence of fever in this district, excepting that the Civil Surgeon states that the heavy mortality in thanas Monghyr and Shekpura is due to there being no drainage in these places, and to the low class of the people having used foul water; and that the Sub-divisional Officer of Shekpura adds, with reference to the high death-rate in the Shaikpura town, that it is very unhealthy, its drainage and sanitation being bad.

	Ratio per mille. In 1885.	Ratio per mille. In 1884.		Ratio per mille. In 1885.	Ratio per mille. In 1884.
Monghyr thana ...	36·81	15·29	Sekandra thana	25·51	12·98
Shekpura town ...	29·95	26·04	Kharakpur „	25·44	15·98
Beguserai thana ...	29·45	14·05	Chakai „	23·46	13·52
Jamalpur „ ...	29·38	15·17	Gogri „	22·96	9·33
Surajgarra „ ...	27·66	15·07	Shekpura „	18·92	11·32
Jamui „ ...	27·00	14·75	Jamalpur town	18·57	17·17
Tegra „ ...	26·84	15·92	Monghyr „	16·08	9·92

148. *Bhagulpore.*—In this district the casualties from fever amounted to 23·13 per 1,000 of population, and this rate exceeded that of the preceding year by 6·79 per 1,000 and of the lustrum 1880-84 by 10·24 per 1,000. Excepting Madehpur and Bongong, the rest of the circles in the district returned noticeably high death-rates, as per figures given in the margin. It is stated that Pertabganj and Bihipur are low and swampy and therefore subject to fever; and the Magistrate observes that the part of the country within the influence of the flood of the Kosi river, comprising thanas Pertabganj, Madehpur and Kissenganj suffers every year during the rains from fever. The monsoon commenced in June and ended in September. The death-rates in these thanas during 1884 and 1885 are exhibited in the margin. This record supports the statement of the Magistrate with regard to Pertabganj, except that October, November and December were also unhealthy months, but not to the same extent as May to September; but with regard to Mudehpurah and Kishenganj it is not in accord with the statistics for they show that October, November and December were the unhealthiest months.

	Ratio per mille.		Ratio per mille.
Bihipur thana ...	41·19	Pertabganj thana ...	21·52
Bhagulpore „ ...	32·66	Bhagulpore town ...	21·14
Banka „ ...	32·42	Katur'a thana ...	20·02
Colg ng „ ..	32·38	Kissenganj „ ...	19·80
Sultanganj „ ...	26·89	Supole „ ...	19·29
Amarpur „ ...	25·43		

	Ratio per mille.							Ratio per mille.					
	Pertabganj.		Madeh-pur.		Kissenganj.			Pertabganj.		Madeh-pur.		Kissenganj.	
	1885.	1884.	1885.	1884.	1885.	1884.		1885.	1884.	1885.	1884.	1885	1884.
January ...	1·27	1·46	·86	·87	1·62	·97	July ...	2·13	1·29	·95	1·03	·94	·81
February ...	1·12	1·19	·76	·68	1·65	·73	August ...	2·24	1·46	1·10	·87	1·21	·87
March ...	1·55	1·49	1·14	·69	1·94	1·19	September ..	1·44	1·11	1·18	·83	1·62	·78
April ...	1·42	1·53	1·10	1·05	1·41	·73	October ...	2·11	1·40	1·74	·80	1·90	1·16
May ...	1·99	2·01	1·13	·99	1 30	·63	November...	2 19	1·64	1·88	1·22	2·27	2·37
June ...	2·27	1·95	·91	1·06	1·47	1·10	December ...	1·74	1·36	1·43	1·24	2·51	2·20

149. *Purneah.*—The mortality from fever in this district, although greater than that of the preceding year and of the quinquennium 1880-84 by a little above 3 per 1,000 of population, was not excessive, as it amounted to 19·22 per 1,000. Nevertheless, the circles marginally named suffered severely. Nothing relating to the fever in this district, worthy of record, has been furnished in the local reports, excepting that the Civil Surgeon says that the effect of the inundations was to lessen fever. But this expression of opinion is not supported by the statistics given in the margin of the areas which were extensively inundated in this district during August and September, except to some extent with regard to thana Gondwara.

	Ratio per mille.		Ratio per mille.
Purneah town ...	32·03	Raniganj thana ...	24·62
Kusba Amour thana ...	26·23	Kadwa „ ...	21·91
Balrampore „ ...	25·74	Manihari „ ...	20·25

Thanas.		October.	November.	December.
Manihari ...	1885 ...	3·83	2·64	2·35
	1884 ...	1·85	2·06	2·03
Gondwara ..	1885 ...	2·08	1·72	1·54
	1884 ...	1·57	2·54	2·00
Kadwa ...	1885 ...	2·78	2·97	2·68
	1884 ...	1·67	1·84	2·25
Balrampore ...	1885 ...	2·38	4·39	4·18
	1884 ...	1·44	2·27	2·79

150. *Maldah.*—The incidence of the disease in this district during this year resulted in increase in both the area covered, and the mortality caused, by it—the increment in extension being represented by 5·15 per cent. of the villages, and that of fatality by 2·11 per 1,000 of population as compared with the preceding year. The death-rate, amounting to 17·95 per 1,000, was, however, low. Of the circles in the district, only thanas Gajol, Ratna and Kharba returned high death-rates, viz. of 22·84, 22·73 and 19·62 per 1,000 of population respectively. The Civil Medical Officer attributes the prevalence of the fever to humidity of atmosphere, caused by the retention of rain water in the numerous *bhils* and silted up river-beds with no outlets; and with reference to the winter prevalence and fatality of the disease he notes that the former was less owing to the inundation, and the latter higher owing to the greater number of the deaths having occurred from chronic fever associated with anœmia, dropsy and dysentery. The observations of the Officiating Deputy Sanitary Commissioner, Metropolitan Circles, in some villages in the Kharba thana which was inundated, confirm the first of the above statements, and the mortuary statistics of this thana, as well as of English Bazar and Maldah which were also involved, show that the mortality was higher during the months of October, November and December than during the other months, and much greater than during the corresponding months of the year 1884.

151. *Sonthal Pergunnahs.*—This district appears to have suffered the least of all the districts in the Bhagulpore Division. The mortality, although in excess of those of the preceding year and lustrum by ·97 and 3·33 per 1,000 of population, respectively, amounted to only 13·22 per 1,000. Beyond the following statements made by the Sub-divisional Officers of Rajmehal and Pakour, the reports of the year do not afford any information relative to fever prevalence worth recording. The Rajmehal Officer says that no unusual sickness was observed to follow the subsidence of the inundation in his Sub-division; but the Pakour Officer notes that during the floods no bad effect on health was perceptible, but that when the water began to subside fever commenced to increase. The inundation in these Sub-divisions occurred in August and September. The statistics furnished in the margin, if correct, support both statements.

Sub-divisions.			*Ratio per mille.* October.	November.	December.
Rajmehal	... 1885	...	1·13	·91	·55
	1884	...	1·00	1·02	·89
Pakour	... 1885	...	1·42	1·31	1·08
	1884	..	·88	1·12	1·05

152. The fever data of the districts in the Patna or Western division of Behar, marginally presented, indicate that relatively Gya suffered most from the disease and Sarun least, but all, excepting Gya and Shahabad, at a low rate; that in comparison with the figures of 1884, Gya and Sarun exhibited diminished, and the rest of the districts increased mortality; that in association with the mean results of the lustrum 1880-84 all the seven districts returned higher death-rates; and that the months of greatest prevalence of the disease were, throughout, August to December, excepting that its severity terminated one month earlier in Mozufferpore, Durbhanga and Sarun.

Incidence of Fever in the Patna (*West Behar*) Division.

Districts.		Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of deaths per *mille.*	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880-84.	Months of greatest prevalence.
Patna ...	...	65·07	2·07 *D*	16·47	1·74 *I*	1·07 *I*	August to December.
Gya ...	...	80·01	2·09 *I*	20·71	·10 *D*	6·00 *I*	Ditto.
Shahabad ...	...	95·41	19·94 *I*	19·72	0·84 *I*	8·52 *I*	July to December.
Mozufferpore	...	68·69	·11 *D*	10·94	2·15 *I*	2·60 *I*	August to November.
Durbhanga	...	35·35	·61 *D*	12·20	3·76 *I*	3·49 *I*	Ditto.
Sarun ...	...	41·43	·29 *D*	8·21	·84 *D*	1·78 *I*	Ditto.
Chumparun	...	27·60	1·22 *I*	12·68	·14 *I*	4·41 *I*	August to December.
Total	...	57·45	3·47 *I*	14·11	1·09 *I*	3·91 *I*	Ditto.

153. *Patna.*—In this district fever caused the deaths of 16·47 per 1,000 of the population. This rate, although not excessive, was, however, in excess of those of preceding year and lustrum by 1·74 and 1·07 per 1,000, respectively. Only in three of the circles in the district, namely, Barrh town, and Dinapur and Sillao thanas the death-rates were exceptionally high, the rates being 32·31,

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31·78 and 19·67 per 1,000 respectively. The local reports do not contain any noticeable account of the prevalence of the fever, excepting that, according to the Civil Surgeon, the unusually heavy inundation which occurred in August and September "caused an increase of fever in some parts of the districts." The inundated tracts lay in the Barrh and Behar sub-divisions, and the figures in the margin indicate the rates at which they suffered, which appear to bear out the Civil Surgeon's observation.

		Ratio per mille.		
		October.	November.	December.
Barrh	1885	2·03	2·34	1·09
	1884	1·34	1·82	1·24
Behar	1885	2·15	2·33	1·35
	1884	1·25	1·17	1·05

154. *Gya.*—Here an extension of the disease was associated with a small decrease of mortality, viz. to the extent of ·10 per 1,000 of population as compared with the preceding year, the total casualty rate being 20·71 per 1,000. In comparison, however, with the mean results of the quinquennium 1880-84 the large increase of 6 deaths per 1,000 is seen. The areas of highest mortality are cited in the margin. The reports do not in this year also furnish any information relating to the incidence of the disease in the district.

	Ratio per mille.		Ratio per mille.
Nowada thana	21·25	Barachatti thana	21·84
Gya "	23·65	Daudnagar "	20·02
Rajauli "	23·45	Aurangabad "	19·63
Sherghati "	22·72	Arwal "	19·35
Gya town	22·56		

155. *Shahabad.*—Fever prevailed very extensively in this district, much more extensively than in the preceding year, as deaths were reported from 95·41 per cent. of the villages against 75·47 per cent. in 1884. The mortality also was rather high, amounting to 19·72 per 1,000 of population, and the difference between this rate and those of 1884 and of the lustrum 1880-84, represented by increases of 6·84 and 8·52 per 1,000, respectively, was very great, indicating that the district has been deteriorating in health very considerably for some years. The areas of highest suffering are named in the margin. It is singular that amidst this great suffering the three towns of Domraon, Arrah and Buxar should return the lowest death rates viz. of 12·50, 9·52 and 7·41 per 1,000. The heaviest mortality of the year occurred in the 3rd and 4th quarters, *i.e.* during and after the rains. The Assistant Surgeon of Sasseram reports that the fever prevailed epidemically in his sub-division, there being not a single village in which the disease was not present, while in the town of Sasseram all the inmates of every house was affected by it, and that the fever was in nature and type exactly similar to the fever of Lower Bengal after the rainy season, attended in almost every case by the usual sequelæ. He attributes its prevalence to sub-soil humidity caused by the increased rainfall of the year, and to some extent by canal irrigation; but he adds that there are places situated at a considerable distance from the canals which were equally affected, so he concludes that the excessive rainfall was responsible for the fever of this year. Mr. Macpherson, the Joint-Magistrate, supplements the above by the statement that, it is an ascertained fact that the level of the sub-soil water has risen throughout the canal irrigated tracts, and that the canal embankments cause much obstruction to the drainage of the country. The Civil Surgeon has no doubt that the fever is, to a great extent, due to heavy rainfall, partly at unseasonable times, and to the unusually extensive and prolonged inundations. The Magistrate concurs in this opinion. The area which was chiefly affected by the inundation, which occurred during July, August and September, is comprised in the Arrah and Buxar sub-divisions, and the mortality in those sub-divisions during the months of October, November and December, given in the margin, endorses the above opinion.

	Ratio per mille.		Ratio per mille.
Buxar thana	30·97	Domraon thana	21·00
Kharghar "	29·33	Sasseram "	20·20
Mohania "	25·40	Dehri "	19·26
Dhangain "	24·07		

		Ratio per mille.		
		October.	November.	December.
Arrah	1885	2·09	1·94	1·17
	1884	·98	1·04	·83
Buxar	1885	4·22	5·00	2·93
	1884	1·33	1·18	1·12

156. *Mozufferpore.*—Here, with a small diminution in the area pervaded by the disease, there was an enhancement of mortality to the extent of 2·15 per 1,000 of population as compared with the death-rate of 1884 and of 2·60 per

1,000 as contrasted with the mean result of the lustrum 1880-84; but the total casualty rate, amounting to 10·94 per 1,000 of population, was low. The only circles in which noticeable mortality occurred were the towns of Lalgunj and Mozufferpore, which presented the death-rates of 18·82 and 18·15 per 1,000 of population, respectively. The Civil Surgeon reports that fever, complicated with diarrhœa and cholera, prevailed in many parts of the district, and that this fever was not malignant in character, but that the great loss of life which attended it was chiefly due to the starvation system of treatment for its cure so popular among the natives of Behar. He also observes that there was no noticeable deterioration of the public health referable to the floods, and that, as mentioned in previous reports, he failed to trace any marked connection between inundation and out-breaks of malarial disease. The exact areas, excepting the town of Mozufferpore, have not been defined. In this town, however, the death-rates during October, November and December of this year amounted to 1·38, 1·66 and 1·75 per 1,000 of population, respectively, as opposed to 1·52, 1·33 and 1·35 per 1,000, respectively in 1884.

157. *Durbhanga.*—The behaviour of the disease in this district was the same as in Mozufferpore. The area attacked was somewhat smaller, but the mortality amounting to 12·20 per 1,000 of population, although low, was higher by 3·76 and 3·49 per 1,000, as compared with the rates of the previous year and lustrum, and no circle in the district can be said to have returned a noticeably high death-rate. Nothing worthy of record has been presented in the local reports excepting that the Civil Surgeon observes that the very heavy rainfall during the autumnal months enhanced the mortality.

158. *Sarun.*—Compared with all the districts in the Patna Division this district returned the lowest death-rate, viz. of 8·21 per 1,000 of population. This rate was lower than that of 1884 by ·84 per 1,000, but higher than that of the lustrum 1880-84 by 1·78 per 1,000. In this district also no circle presented noticeably high mortality. I think, however, that faulty registration has more to do with these low death-rates than the fever. Dr. Russell, the Civil Surgeon, observes that the effect of irrigation in this district "is to choke up the natural drainage lines and to induce malaria."

159. *Chumparun.*—The fever in this district, although more extensively and fatally prevalent, was not inordinately so in either respect. The death-rate amounted to 12·68 per 1,000 of population, as opposed to 12·54 and 8·27 per 1,000 during the previous year and lustrum. The behaviour of the disease was the same as reported last year. It attached itself with the highest fatal results to the two sub-Himalayan thanas of Louria (20·45 per 1,000) and Bagaha (17·49 per 1,000), and the greatest mortality occurred in November when the country was drying up; but it is to be observed that the next greatest mortality occurred in August when the rains were very heavy.

ORISSA.

Incidence of Fever in the Orissa Division of the Province.

160. In the Orissa Division of the Province, 24,394 persons, out of a population of 3,628,832, or at the rate of 6·72 per 1,000, died from fever in 43·98 per cent. of the villages, as opposed to 26,523 persons, or at 7·30 per 1,000 in 47·69 per cent. of the villages during the preceding year, and 25,805 persons, or at 7·11 per 1,000 during the quinquennium 1880-84. A comparison of these figures shows that the disease was somewhat less prevalent and fatal during the year under review. As usual Orissa suffered least from fever in comparison with the three other Divisions of the Province. The demeanour of the disease with regard to seasonal incidence was the same as in preceding years. It prevailed with some severity in January, maintained lower but almost uniform rates from February to September and culminated in intensity in November and December.

Incidence of Fever in the Districts in Orissa.

161. *Cuttack, Puri, Balasore.*—Of these districts, which comprise the Orissa Division of the Province, Cuttack suffered the most, Puri the least and Balasore intermediately; but in none of them was the mortality high. In all of them, moreover, the fever

attacked a smaller number of villages and caused a lower mortality in comparison with the incidence of the disease during the preceding year and lustrum, excepting that Cuttack returned a higher death-rate than in 1880-84. The months of greatest prevalence of the disease were November and December. The annexed table contains the statistics which illustrate these observations, and the circles in the three districts which presented the highest casualty rates are named in the margin. The other noticeable facts connected with the history of the disease in these districts furnished in the local reports are the following: In *Cuttack* the prevalent fever was intensified in the cyclone-stricken tracts on the coast from causes already described in paragraph 38 of this Report; but the suffering and privation were much ameliorated by supplies of food which were sent to all the distressed tracts, and by such other assistance as was within the power of the local authorities to bestow. In *Puri* it was noticed as a curious circumstance that during several years past as the fever mortality declined, the deaths under the head of "Other causes" have increased. The fever in this district is said to be most prevelent after the breaking up of the rains, and the villages on the Chilka Lake, in the Puri Sudder station, and the outposts of Champagarh and Ghintakapalli, are considered the unhealthiest places in the district. *Balasore.*—The opinion expressed in a former report that the Burdwan, Hughli and Midnapore fever had invaded this district through its northern thanas has been abandoned this year. The local reports indicate that the Jellasore and Baliapal thanas are popularly believed to be very malarial; that small tracts along the sea coast just where the rivers debouch upon the sea, are very feverish and notorious for unhealthiness, attributed to the rank vegetation and heavy deposits of silt at these places, but that where the coast is free from jungle it is healthy enough everywhere; and that thana Basudevpur, which suffered most from the influx of the storm-wave, exhibited a large increase of fever.

DISTRICTS.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880—84.	Months of greatest prevalence.
Cuttack	57·60	·04 *D*	8·64	·25 *D*	·58 *I*	January, March, November and December.
Puri	24·02	5·77 *D*	2·24	·69 *D*	2·70 *D*	February and March, November and December.
Balasore	41·38	7·15 *D*	7·27	1·14 *D*	·06 *D*	January, November and December.
Total ..	43·98	3·71 *D*	6·72	·58 *D*	·39 *D*	

			Ratio per mille.
In Cuttack.			
Aul thana	...	...	15·86
Dharamsala ,,	...	...	11·70
Patamundi ,,	...	...	11·46
In Puri.			
Puri town	...	...	8·47
In Balasore.			
Chandbali thana	...	...	12·13
Baliapal ,,	...	...	9·20
Basudevpur ,,	...	...	8·95

CHOTA NAGPORE.

162. The fever statistics of the Chota Nagpore Division of the Province indicate that 51,044 deaths were reported to have occurred from the disease in 55·98 per cent. of its villages, being at the rate of 11·77 per 1,000 of its population, numbering 4,334,178, as opposed to 53,485 deaths, or at 12·34 per 1,000 in 58·90 per cent. of the villages in the preceding year and to 50,397 deaths, or at 11·62 per 1,000 during the lustrum 1880-84. The comparison demostrates that the disease exhibited abated activity in comparison with the outcome of the preceding year, but somewhat greater severity in contrast with the results of the quinquennium above mentioned. Next to Orissa the suffering from fever was least in this Division of the Province. In seasonal incidence the months from January to July exhibited almost uniformly low death-rates; in August there was a rise, and this severity was maintained by the subsequent months up to the end of the year, November yielding the highest casualty rate This behaviour of the disease is not quite in accord with its usual incidence.

163. The marginal table, exhibiting the fever statistics of the four districts in the Chota Nagpore Division of the Province, present the following results—(1) That the area pervaded by the disease was smaller than in 1884 in all the districts, particularly in Lohardugga. (2) That Hazaribagh suffered the most, Lohardugga next, and Singbhum and Manbhum least in almost equal ratio. (3) That the death-rates were lower in all the districts than during both the periods mentioned in the table, excepting in Lohardugga as compared with 1884 and in Hazaribagh with the lustrum. (4) That the months of greatest prevalence of the disease were September to December in all the districts, excepting that in Lohardugga and Manbhum its severity was experienced one month earlier.

Incidence of Fever in the districts of Chota Nagpore.

DISTRICTS.	Percentage of villages attacked in 1885.	Increase or decrease as compared with 1884.	Ratio of Deaths per mille.	Increase or decrease as compared with 1884.	Increase or decrease as compared with lustrum 1880—84.	Months of greatest prevalence.
Hazaribagh ...	55·32	1·65 *D*	15·52	·94 *D*	2·10 *I*	September to December.
Lohardugga ...	49·55	7·65 *D*	11·70	·36 *I*	·73 *D*	August to December.
Singbhum ...	06·68	1·13 *D*	9·59	1·64 *D*	·62 *D*	September to December.
Manbhum ...	57·71	1·56 *D*	9·12	1·01 *D*	·15 *D*	August to December.
Total ...	55·98	2·94 *D*	11·77	·57 *D*	·15 *I*	

164. *Hazaribagh, Lohardugga, Singbhum and Manbhum.*—It will be seen from the above table that of these districts the first named presented a death-rate of 15·52 per 1,000 of population, the second 11·70 per 1,000, the third 9·59 per 1,000, and the fourth 9·12 per 1,000. The areas which experienced the greatest suffering are those marginally named. Nothing of importance, referring to the incidence of fever in these districts, has been submitted in the local reports, excepting that in *Singbhum* the whole of its western portion, including Saranda Pir in thana Chukurdhurpur and Turuf Atkosi in thana Ghatsilla, have a notoriety for unhealthiness, fever being the dominating disease; and that in *Manbhum* the country about the Dalma Range in the south of the district is subject to fever and is generally unhealthy for persons not accustomed to its climate.

	Ratio per mille.
In Hazaribagh.	
Hunterganj thana ...	22·12
Simuria " ...	21·63
Chatra " ...	20·38
Tondwa " ...	19·21
In Lohardugga.	
Daltonganj thana ...	24·71
Manika " ...	20·36
Garwa " ...	20·05
Chaterpur " ...	18·09
In Singbhum.	
Chaibassa town ...	15·98
In Manbhum.	
Purulia town ...	16·44

165. *Port of Calcutta.*—The figures in the marginal table show the extent to which fevers prevailed and proved fatal during the year under review among the 23,573 European seamen who entered the Port of Calcutta, the daily average number present being 1,693. They indicate that in comparison with the statistics of the preceding year enteric fever prevailed with considerably abated severity, the admissions into hospital being 4 against 7, and the death-rate ·59 against 2·96 per 1,000 of average strength, the quinquennial mean mortality being 1·91 per 1,000; and that while the admissions to hospital for malarious and simple fevers were larger, the mortality from the former cause was the same as in 1884, and no deaths occurred from the latter during both years.

Incidence of Fevers among the European Seamen.

	Admissions to hospital.		Deaths.		*Ratio per mille.*	
	1885.	1884.	1885.	1884.	1885.	1884.
Fever—enteric ...	4	7	1	5	·59	2·96
" malarious	194	158	2	2	1·18	1·18
" simple ...	344	297	...	...	...	...

166. Among the *Native Floating Population* 12 deaths against 5 in 1884 from malarious fever, or at the rate of ·47 against ·19 per 1,000 of the population estimated at 25,409, were reported to have occurred, and no deaths were returned as having been caused by simple fever against 10 in the preceding year. For reasons submitted in paragraph 33 of this Report these figures are unreliable, being incomplete.

Incidence of Fever among the Native Floating Population

BOWEL-COMPLAINTS.

167. Sixty-three thousand eight-hundred and eight casualties were reported to have occurred from Bowel-complaints during the year under review in 10·69 per cent. of the villages in the Province, or at the rate of ·96 per 1,000 of population, as opposed to

Extent of prevalence and fatality of Bowel-complaints.

58,376 deaths in 10·61 per cent. of the villages, or at ·88 per 1,000 in the preceding year, and to 55,401 deaths, or at ·83 per 1,000 during the lustrum 1880-84. In 20 against 13 of the registering circles in the Province maladies of this nature prevailed with noticeable severity, while they were absent from 20 against 21, and the remaining 607 circles against 615 exhibited no abnormal degree of suffering. This comparison indicates that while the diseases in question prevailed in an almost equal area they were more fatal. But I would attribute this increase in the number of deaths rather to improving registration than as expressing severity of prevalence of the diseases, for the recorded figures do not approach even an approximation to the actual prevalence and fatality of Bowel-complaints.

Comparative prevalence of Bowel-complaints in the Urban and Rural circles.

168. The urban circles contributed 9,382 deaths to the total casualties of the year, or at 4·12 per 1,000 of their population, and the rural circles 54,426, or at ·85 per 1,000 against 3·24 and ·79 per 1,000 respectively during the preceding year.

169. The marginal figures illustrate the seasonal incidence of bowel-complaints. The highest mortality occurred this year in August and September, while in 1884, November and December were the worst months.

Seasonal incidence of Bowel-complaints.

	Number of deaths.			Number of deaths.	
	1885.	1884.		1885.	1884.
January ...	5,009	4,865	July ..	4,857	4,525
February ...	4,240	3,982	August ...	6,274	5,039
March ...	4,764	4,634	September ...	6,413	4,590
April ...	4,946	5,000	October ...	6,081	4,848
May ...	4,908	5,050	November ...	5,900	5,706
June ...	4,607	4,319	December ...	5,809	5,788

Areas which suffered most from Bowel-complaints.

170. The districts, towns and rural circles which recorded the highest death-rates from bowel-complaints are named below:—

DISTRICTS.	Ratio per mille.
Balasore	5·06
Howrah	4·85
Darjiling	3·08
Hughli, including Serampore	2·95
Puri	2·93
Patna	2·49
Cuttack	2·34

TOWNS.	Ratio per mille.
Revilgunge	10·24
Serampore	8·60
Suburbs of Calcutta ...	8·34
Hughli	8·10
Durbhanga	7·88
Sitamurhi	7·51
Uterpara	7·44
Barrh	7·28
Jungipore	7·16
Bhagulpore	7·03
Jamalpore	6·11
Balasore	6·11
Gya	6·02
Puri	5·97
Monghyr	5·65
North Suburban town ...	5·57
Chundrakona ...	5·38
Chaibassa	5·16
Mozufferpore ...	5·14
Ranigunge	5·02

RURAL CIRCLES.	Ratio per mille.
Basta in Balasore ...	9·83
Patna	8·46
Dinapore in Patna ...	6·75
Basudevpore in Balasore	6·72
Manar in Patna ...	6·56
Ampta in Howrah ...	6·41
Balasore	6·22
Darjiling	6·04
Banpur in Puri ...	5·54
Chupra in Sarun ...	5·26
Bagnan in Howrah ...	5·19
Phulpara in Durbhanga	5·11

Dysentery and Diarrhœa in Chittagong.

171. The Magistrate of Chittagong reports that an epidemic of dysentery and diarrhœa occurred among the coolies in the Futickcherry Tea Estate. During this outbreak 25 died from an average strength of 558 labourers. It was attributed to bad water from the Barromassi river which had been dammed up by the coolies owing to there being no wells in the garden, but the dam having been burst soon after by a flood, the water became muddy and filthy. The employers of the coolies have been requested to sink wells.

172. *Port of Calcutta.*—From the marginal figures it will be seen with regard to the *European Seamen* that, compared with 1884, dysentery prevailed among them with considerably greater severity, and that while the admissions into hospital for diarrhœa were less, no mortality occurred from it against a death-rate of 1·78 per 1,000 of population in the preceding year; and with respect to the *Native Floating Population* that while no

Dysentery and Diarrhœa in the Port of Calcutta.

	Admissions to hospital.		Deaths.		Ratio per mille.	
	1885.	1884.	1885.	1884.	1885.	1884.
European seamen						
Dysentery ...	116	80	6	2	3·54	1·18
Diarrhœa ..	102	125	...	3	...	1·78
Native Floating Population.						
Dysentery			4	2	·15	·07

casualties from diarrhœa occurred among them, dysentery exhibited double the amount of the mortality of 1884; but the figures relating to the prevalence of the diseases among the latter class of the Port population are apparently unreliable.

INJURY.

173. The casualties from Injury amounted during the year under review to 28,956, or in the proportion of ·43 per 1,000 of population, in opposition to 24,674 deaths, or at ·37 per 1,000, in the preceding year and to 22,790 deaths, or at ·34 per 1,000, during the lustrum 1880-84. The comparison indicates an increase in the fatal results from this death cause, but nothing approaching to the actual mortality, if deaths from drowning and other accidents during the cyclone and storm-wave in Orissa and the inundation in a great portion of the Province could have been included under this head—the estimated number of lives lost in Cuttack alone amounting to about 15,000. To the recorded casualties of the year the urban circles contributed 1,147 deaths, or at ·50 per 1,000 of population, and the rural circles 27,809, or at ·43 per 1,000.

Mortality from Injury.

174. This information is furnished in the marginal table, contrasted with the similar information for the lustrum 1880-84. An examination of the figures in this table shows that the usual rule of snakes and wild beasts causing the greatest loss of life was departed from this year, the preponderance being conceded to accidents. This is no doubt due to some portion of the deaths from drowning, &c., during the storm-wave and inundations above referred to, having been recorded under the head of accidents. In other respects the observations of former years remained unchanged, suicides ranking third in the death roll, wounds exhibiting the least number of deaths, and the suicides of women preponderating.

Mortality from different Classes of Injury.

	Suicide.				Wounds.		Accident.		Snake bites and killed by wild beasts.	
	Deaths.			Ratio per cent. to Total Deaths from Injury.						
	Male.	Female.	Total.		Deaths.	Ratios.	Deaths.	Ratios.	Deaths.	Ratios.
In 1885 ...	1,040	1,783	2,823	9·74	1,627	5·61	13,325	46·01	11,181	38·61
,, 1880—84 ...	956	1,517	2,473	10·85	1,348	5·91	9,050	39·71	9,919	43·52

175. In consonance with the observations of former years, the greatest loss of life from violence occurred during the rainy months of June to September, for during this period 16,153 deaths were recorded against 12,803 during the other months. This mortality represents over 55 per cent. of the total casualties, and the reason for this preponderance arises, in great part, from the circumstance of reptiles being driven from their holes and wild beasts from their lairs by water and seeking refuge near the dwellings of men.

Seasonal incidence of Deaths from Violence.

176. *Port of Calcutta.*—The Health Officer reported that of the *European Seamen* nine met their death from drowning in the Port, being at the rate of 5·31 per 1,000 of average strength estimated at 1,693, against 12·47 per 1,000 during the preceding year.

Mortality from Accident in the Port of Calcutta.

OTHER CAUSES.

177. From diseases generally classed under the head of "Other Causes," in contradistinction to the specified diseases reported on in the foregoing portion of this Report, there were recorded during the year under review 186,209 deaths, or in the proportion of 2·81 per 1,000 of population, against 176,373, or at 2·66 per 1,000, during the preceding year, showing a small increase in the

Mortality from Other Causes.

death-rate, viz. of ·15 per 1,000. The areas which bore the severest suffering from these diseases are named below :—

DISTRICTS.	Ratio per mille.
Puri ...	11·36
Sarun ...	9·51
Backergunge	6·65
Balasore ...	5·52
Cuttack ...	5·03

TOWNS.	Ratio per mille.
Puri ...	20·98
Sewan ...	16·15
Gya ...	16·13
Dacca ...	13·22
Barrh ...	13·08
Bhagulpore	12·68
Jamalpore	12·60
Kendrapara	12·42
Suburbs of Calcutta	12·05
Sitamurhi ...	11·59
Cuttack ...	10·47
Midnapore...	10·16
Balasore ...	9·42

RURAL CIRCLES.	Ratio per mille.
Banpur in Puri	18·56
Chupra in Sarun	13·42
Buragaon in Sarun	12·44
Khurdah in Puri	12·17
Matbaria in Backergunge	11·30
Gopalgunge in Sarun ...	11·16
Patna ...	10·29
Dinapore in Patna	10·07
Puri	10·01
Pipli in Puri	10·00
Darwali in Sarun	9·99
Govindgunge in Chumparun	9·96
Perozepore in Backergunge	9·90
Dhamnagore in Balasore	9·42
Sewan in Sarun	9·27
Gope in Puri	9·01
Aul in Cuttack	9·00

Measles and Whooping cough in Darjiling.

178. In the town of Darjiling an epidemic of measles prevailed in March, April and May chiefly among the Europeans The outbreak was traced to importation, as the first case occurred in a boy in St. Paul's School who had returned from an infected house in Calcutta. The next sufferers were the boys in his class and the day pupils of the school carried the disease to two or three families in the station. Moreover, it was introduced into the Convent by two day scholars who took it from a Bhutia servant whose children had it. Whooping cough also prevailed severely and was also imported as it commenced in the Convent boys' schools through the medium of a boy who had shortly arrived from Calcutta with it. The malady was then carried by the affected boys to the Station.

EUROPEAN SEAMEN.

Mortality from Heat Apoplexy or sunstroke in the Port of Calcutta.

179. *Port of Calcutta.*—There was a great reduction in the number of admissions into hospital of *European Seamen* from sunstroke, but the mortality was much greater. The figures are :—number admitted 5 against 13 in the preceding year; deaths 3 against 1; and death-rate 1·77 against ·59 per 1,000 of average strength. This mortality was also much higher than the quinquennial mean rate which is ·98 per 1,000.

Mortality from Scurvy.

180. For this malady 13 *European seamen* were admitted into hospital against 24 in 1884, but none of the cases proved fatal, indicating great improvement under this head. The Health Officer reports, with reference to his observations in his Report for 1884 on the frequent occurrence of scurvy on board of vessels arriving from New York, that this year only four cases of the disease were found on board of vessels which arrived from that Port, and that the cause of the disease could not, in any instance, be attributed to improper food or neglect of rules. While on this subject, it should be mentioned that seven cases of scurvy were found on board a vessel from New York carrying a lascar crew. The enquiry held in this matter elicited the fact that while the men were well treated and had no complaint to make regarding their food in general, the vegetables supplied to them were not in accord with the articles of agreement entered into by them with respect to "vegetables dry at sea." The master of the vessel had interpreted the word "dry" to mean "preserved," and had issued preserved potatoes the antiscorbutic qualities of which are doubtful. This misunderstanding will, it is hoped, be prevented in future by the notification of the 6th June 1885 defining the meaning of the term "dry at sea." In addition to the above-mentioned deviation from the rules, it was found that lime-juice of two kinds (in about equal quantities) had been issued. "One being the fortified juice, issued from a bonded warehouse, the citric acid in which should have been 25 grains per fluid ounce. The Chemical Examiner reported that it contained only 21·12 grains. The other kind was a non-alcoholic lime-juice containing, according to the analysis of the Chemical Examiner, 29·08 grains. Both these specimens are suspicious—the first, by reason of its insufficient quantity of citric acid; the second, by its excess over the

Government standard 25 grains, suggesting sophistication. In addition to this supicion, the "non-alcoholic" is reported by the Chemical Examiner, to contain salicylic acid, that this is an unfortunate addition has been established, of late years, by the investigations of the highest sanitary authorities in France, who have refused to sanction the addition of salicylic acid, in any quantity, as a preservative of food either solid or liquid. They hold that the daily ingestion of the least quantity of salicylic acid by persons whose liver or kidneys are not sound (in which category many sailors may be placed) is dangerous."

Mortality from "Other diseases."

181. One thousand one hundred and seventy-nine *European Seamen* against 1,248 in 1884 were admitted into hospital for maladies classed under the head of "Other diseases," and of this number 21 against 26 died, the proportionate death-rate being 12·40 against 15·43 per 1,000 of average strength. These figures indicate that the incidence of the diseases was milder. The Health Officer states that the mortality from these diseases, consisting principally of phthisis and liver complications, might be attributed to climatic causes. He also observes that, as in 1884, so in this year, there was no evidence to show that venereal diseases among the *European Seamen* had increased since the abrogation of the Contagious Diseases Act, and he submits the marginal figures in support of this view of he question.

		Average strength of Seamen.	Total admissions of Venereal diseases cases into Howrah and General Hospitals.	Admission rate per 1,000 of average strength.
1883	...	1,860	257	127·4
1884	...	1,684	184	109·2
1885	...	1,693	170	100·4

NATIVE FLOATING POPULATION.

Mortality from Other Diseases.

182. The mortality among the *Native Floating Population* from the diseases classed under the head of "Other diseases," so far as it could be ascertained, was also lower. The casualties amounted to 25, or at ·98 per 1,000 of population against 37, or at 1·45 per 1,000 in the preceding year.

SECTION VII.

GENERAL HISTORY OF VACCINATION.

Year of Report.

183. THE history of vaccination considered in this section is for the official year 1885-86.

Officers in charge of the Vaccination Circles during the year.

184. *Calcutta.*—Surgeon-Major J. O'Brien from 1st April to 31st October 1885, and Surgeon-Major R. C. Sanders during the rest of the year.

Metropolitan Circles.—Dr. Kristo Dhone Ghose from 1st April to 20th May 1885. Surgeon-Major Kally Puddo Gupta returned from furlough and rejoined on the 21st May 1885, but having been deputed to special duty, he made over charge to Assistant Surgeon Jadub Chunder Ghose, Rai Bahadoor, the senior Deputy Superintendent, on the 20th November, who officiated till he was relieved on the 1st December by Surgeon J. ffrench Mullen who continued in office to the end of the year.

Darjiling Circle.—Surgeon-Major J. J. Wood throughout the year.

Ranchi Circle.—Surgeon W. Owen from 1st April to the 26th December 1885, and Surgeon L. A. Waddell from 27th December to the end of the year.

Sonthal Pergunnahs Circle.—Assistant Surgeon Kally Prosono Ghosal from 1st April to 10th August 1885, and Assistant Surgeon Kasi Nath Ghosh from 11th August to the end of the year.

Eastern Bengal Circle.—Apothecary A. Lyons throughout the year.

Behar Circle.—Assistant Surgeon Mothura Nath Sen throughout the year.

Orissa Circle.—Assistant Apothecary P. Veeriah Naidu throughout the year.

185. *Strength of Working Establishment.*

CIRCLES.	1885-86.							1884-85.						
	Superintendent.	Deputy Superintendents.	Inspectors, Native Superintendents, Inspecting Vaccinators, &c.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.	Superintendents.	Deputy Superintendents.	Inspectors, Native Superintendents, Inspecting Vaccinators, &c.	Head Vaccinators.	Vaccinators.	Apprentices.	Licensed Vaccinators.
Calcutta ...	1	2	...	3	19	...	......	1	2	.....	3	19	..	......
Metropolitan Circles ...	1	4	39	...	......	...	381	1	4	39	...	...	.	343
Suburbs of Calcutta ...	...	1	3	...	12	...	......	...	1	.....	3	12	...	.....
Bovine Department, Suburbs.	...	...	......	1	3	...	......	...	1	1	...	3	..	.....
Total of Metropolitan Circles	1	5	42	1	15	...	381	1	6	40	3	15	...	343
Darjiling Circle	1	2	11	1	5	...	185	1	2	11	1	6	...	174
Ranchi „	1	1	11	1	29	...	158	1	1	14	...	31	...	170
Sonthal Pergunnahs Circle...	1	...	10	3	42	...	81	1	......	10	3	59	...	83
Eastern Bengal „ ...	1	1	6	6	76	34	249	1	1	6	6	76	39	214
Orissa Circle	1	...	2	3	26	4	12	1	......	......	3	28	4	.. ...
Behar „	1	...	4	4	43	13	91	1	......	4	4	44	13	83
Total of Vaccination Circles	8	11	86	22	255	51	1,157	8	12	85	23	276	56	1,067
Municipalities, Dispensaries, &c.	...	...	......	...	206	...	20	...	......	......	...	213	...	27
GRAND TOTAL ...	8	11	86	22	461	51	1,177	8	12	85	23	489	56	1,094

The changes of establishment in the Vaccination Department, as disclosed in the above table, are that, while on the one hand there was, on the whole,

an increase of one Inspector and 90 Licensed Vaccinators, on the other hand there was a decrease of one Deputy Superintendent, one Head Vaccinator, and 21 Vaccinators. These changes were made for the following reasons. In the *Suburbs of Calcutta* the three Head Vaccinators were done away with, and in their place three Inspectors entertained. The cause of the decrease of three Inspectors and two Vaccinators. and increase of one Head Vaccinator in the *Ranchi* Circle, has not been specifically furnished, probably the Inspectors were sent to the Political Estates and paid by the Estates, and the Head Vaccinator was entertained in the room of one of them, and the services of the Vaccinators were not required this year. There was a decrease of 17 Vaccinators in the Sonthal Pergunnahs Circle for which no explanation has been submitted. In the *Orissa* Circle two Inspectors were newly entertained to supervise the Licensed Vaccinators, who were appointed to carry on the Licensed System of vaccination, which was for the first time introduced into this circle. In the *Behar* Circle one Vaccinator died during the working season, and his appointment was not filled up. The cause of decrease of two Vaccinators in the *Ranchi* Circle and one in the *Darjiling* Circle has not been given. Their services were probably not required, or they had failed to return from leave granted to them during the recess. With reference to the increase or decrease of Licensed Vaccinators shown in the above table, it should be stated that their strength fluctuates according to the requirements of each year.

Employment of Female Vaccinators.

186. It should be mentioned that two female vaccinators were entertained during the year: one in Calcutta and the other in Joynuggur in the Metropolitan circles. The former was employed in visiting the zenanas of the respectable Hindu and Mahomedan inhabitants of the town, and in vaccinating and re-vaccinating grown-up females. The outturn of her work this year was not much, but as the people have come to know that there is a female vaccinator available, it is very probable that her services will be in greater demand during the current year. The female vaccinator of Joynuggur is said to be a fairly-educated person, possessing some knowledge of medicine, surgery, and midwifery picked up at the Calcutta Medical College which she attended to qualify herself as a native midwife. Something happening, she was obliged to give up her college career and take to private practice in Joynuggur, where Deputy Superintendent Jadub Chunder Ghose having met her, trained her in vaccination, after which she began to work as a municipal vaccinator in the town of Joynuggur. She is said to have given every satisfaction in the discharge of her duties, and the Superintendent of the Metropolitan circles intends to promote her at the earliest opportunity, and to employ her in the Suburbs of Calcutta, where her services will be of great use.

Conduct of Establishment.

187. A notice of those of the Vaccination establishment who are favourably mentioned in the reports and of those who were punished for grave misconduct, is subjoined. The conduct of the rest of the establishment, excluding also those who committed minor offences, was, on the whole, good.

Calcutta.—The encomiums bestowed on Assistant Surgeon Ram Chandra Mitter, Deputy Superintendent of Vaccination, in the Report for 1884-85 were repeated this year. He is reported, from his tact and knowledge of the manners and customs of the people, to be able to carry on vaccination with little friction and trouble among the varied populace of Calcutta. *Metropolitan Circles.*—Assistant Surgeon Jadub Chunder Ghose, Rai Bahadoor, Deputy Superintendent of Vaccination, is considered by the Officiating Superintendent to have displayed keen interest in his work, and to have promoted vaccination in his circle successfully. *Darjiling Circle.*—Inspector Hedayutullah and head vaccinator, M. N. Sircar, are reported as being diligent, sensible and intelligent. The latter officer was promoted to the post of Inspector this year. *Ranchi Circle.*—Government vaccinator Bechan Lall, Inspector of Licensed Vaccinators in Manbhum, was highly spoken of for good work rendered. It is gratifying to learn that, although still unsatisfactory, the conduct of the establishment of this circle was not so grossly bad as in former years, and that the worst delinquents having been dismissed, the present staff, although not altogether honest, are efficient vaccinators, and fairly amenable to discipline.

The following table gives the names of those who were guilty of flagrants misconduct, the nature of the offences, and the punishment which was awarded :—

Circle.	Names of officers.	Rank.	Punishment awarded.	CAUSE.
Ranchi ...	Nakhed Lall	Native Superintendent.	Fined	Extortion.
	Purmeshur Dyal	Vaccinator ..	Dismissed	Extortion and disobedience of orders.
	Nasib Lall	Ditto ...	Fined and dismissed .	Incompetency and doing no work for 10 days.
	Bhola and Haradhun .	Vaccinators ...	Fined	Overcharging fees and bad work.
	Araiya (Native Christian)	Vaccinator	License withdrawn ...	Drunkenness, quarrelling and assaulting villagers.
	Iltaf Hossein and Amir Ali	Vaccinators ...	Will be punished ...	Working in other than assigned area in defiance of orders.
	Name not furnished ...	Vaccinator ...	Fined	Taking pice from pregnant women and giving in return flowers, stating that if they are used in puja to "Sitala" the fœtus in utero would be protected against small-pox.
Sonthal Pergunnahs.	Woomesh Chandra Chandra.	Head vaccinator	Fined	Employing inoculators without knowledge and consent of Superintendent.
	Jogendro Nath Dutt Ram Taruck Bose .	Vaccinators ...	Dismissed . ..	Being implicated in a criminal case.
	Aughore Nath Sircar	Inspector ..	Under investigation ...	Obtaining a commission from the licensed vaccinators.
Behar ...	Nasind Dabee Singh ..	Head vaccinator ..	Fined, but case still under consideration.	Working in an area other than that assigned to him, and persisting to do so although fined.
Orissa .	Name not given ..	Vaccinator ...	Dismissed	Omitting to proceed to an area on emergent duty.
	Names not given	2 Vaccinators ..	Fined and suspended	Ditto ditto and disobedience of orders.
	Doityari Das ...	Clerk	Permitted to resign ...	Tampering with the account books.
	Brindabun Dass .. .	Inspector ..	Degraded	Inefficiency and neglect in supervising the licensed vaccinators, so that the scheme which was for the first time inaugurated suffered.

In the *Ranchi* Circle some of the vaccinators had taken rice from the Kols in Kolhan, but the latter said that it was customary with them to give rice, at least a handful, to Tokait Brahmins, and not to accept of vaccination gratis.

Areas vaccinated, and plans which determined the conduct of operations.

188. A summary of the information under this head is subjoined.

189. In *Calcutta* 12,365 operations were performed by 19 vaccinators, controlled by three Head Vaccinators, and supervised by the Superintendent, the Deputy Superintendent and Assistant Deputy Superintendent. As vaccination in this town is carried on under the provisions of the Compulsory Vaccination Act, further particulars as to the manner in which the work was conducted will be furnished in a subsequent paragraph of this Report, which deals with the mode in which that law was worked.

The subjoined table exhibits, in one view, the areas in *all* the circles in which vaccinations were carried on, the staff employed, and the amount of work which was produced during the year under notice, as compared with the results of the preceding year:—

GOVERNMENT AGENCY.								LICENSED AGENCY.							
AREAS OF OPERATIONS. Thanas or Districts.	In whole or in part.	Supervising Officers.*	Number of Inspectors, Native Superintendents, Inspecting Vaccinators or Head-Vaccinators.	Number of Vaccinators.	Number of operations performed. 1885-86.	1884-85.	Difference.	AREAS OF OPERATIONS. Thanas or Districts.	In whole or in part.	Supervising Officers.	Number of Inspectors, Native Superintendents, Inspecting Vaccinators, or Head-Vaccinators.	Number of Vaccinators.	Number of operations performed. 1885-86.	1884-85.	Difference.
		No work is performed by Government Agency in this circle.						Khulna (Districts composing 1st circle)	Whole	Assistant Surgeon Umesh Chandra Ghose.	3	35	44,493	39,550	4,943*I*
								Jessore	Do.		5	47	49,713	50,783	1,070*D*
								24-Pergunnahs, North	Do.		2	15	20,784	23,552	2,768*D*
								Nuddea (Districts composing 2nd circle)	Do.	Assistant Surgeon Premther Mitter.	6	37	45,081	45,854	773*D*
								Murshidabad	Do.		4	29	31,849	34,010	2,161*D*
								Birbhum	Do.		2	21	20,401	12,466	7,935*I*
								24-Pergunnahs, south (Districts composing 3rd circle)	Do.	Assistant Surgeon Jadub Chunder Ghose.	3	30	21,777	22,497	720*D*
								Howrah	Do.		2	11	15,119	15,576	457*D*
								Hughli	Do.		3	27	19,683	21,649	1,966*D*
								Burdwan	Do.		4	29	31,446	28,056	3,390*I*
								Bankura (Districts composing 4th circle)	Do.	Assistant Surgeon Ashutosh Law.	2	36	29,028	20,883	8,145*I*
								Midnapore	Do.		4	64	43,973	51,263	7,290*D*
								Suburbs of Calcutta	Do.	Assistant Surgeon Jogendro Nath Bhattacharji.	4	15	14,044	19,781	5,737*D*
Darjiling	Whole	Dr. Wood Superintendent.	1	5	4,897	8,588	3,691*D*	Dinajpur	Whole	Deputy Superintendent Tajumul Hossein.	6	106	41,159	35,134	6,025*I*
Kurseong	Do.				4,237	2,568	1,669*I*	Maldah	Do.				24,052	19,227	4,825*I*
Kalimpong	Do.				2,307	2,160	147*I*	Julpaiguri	Do.				20,711	13,695	7,016*I*
								Darjiling Terai	Do.				2,187	1,925	362*I*
								Purneah	Do.				43,209	45,371	2,162*D*
								Rajshahye	Do.	Deputy Superintendent Norendra Nath Gupta.	5	79	40,781	34,967	5,814*I*
								Rungpore	Do.				50,300	46,582	3,718*I*
								Bogra	Do.				18,722	19,443	721*D*
Garwa (In Lohardugga)	In part	Drs. Owen and Waddell, Superintendents.	1	9	1,353	7,044	5,691*D*	Doomri (In Hazaribagh)	In part	Drs. Waddell and Owen, Superintendents, and Assistant Surgeon Prosonno Coomar Dey, Deputy Superintendent.	1	14	4,097	....	....
Hosseinabad	Do.				870	7,504	6,634*D*	Bagodar	Do.				1,072	1,448	376*D*
Chutterpore	Do.				2,592	1,918	674*I*	Jageswar	Do.				845	262	583*I*
Patan	Whole				7,851	1,098	6,753*I*	Kasmar	Do.				1,261	4,686	3,425*D*
Ramkunda	In part				94	3,350	3,256*D*	Gawan	Do.		1	22	658	282	376*I*
Balumuth	Do.		1	10	2,701	......	....	Burhi	Do.				9	2,237	2,228*D*
Manka	Do.				1,977	4,140	2,163*D*	Chowparan	Do.				845	920	75*D*
Daltongunge	Do.				1,181	7,966	6,785*D*	Kharakdiha	Do.				2,756	401	2,355*I*
								Giridi	Do.				3,833	509	3,324*I*
								Koderma	Do.				2,069	...	
Kolhan in Singbhum	Almost whole.		1	10	10,314	......	....	Hazaribagh	Do.				194	1,965	1,771*D*

* Operations performed by the licensed Agency include Recess work.

GOVERNMENT AGENCY.

Circles.	Areas of operations: Thanas or Districts.	In whole or in part.	Supervising Officers.	Number of Inspectors, Native Superintendents, Inspecting Vaccinators or Head Vaccinators.	Number of Vaccinators.	Number of operations performed: 1885-86.	1884-85.	Difference.
Ranchi Circle—concluded.								
Sonthal Pergunnahs Circle.*	Colgong (In Bhagulpore) ...	In part	Assistant Surgeon Kasinath Ghosh, Superintendent.	3	1	1,409	10,481	9,072 D
	Banka ...	Do.			3	2,902	5,922	3,920 D
	Katoria ...	Do.				66	3,833	3,767 D
	Amurpore ...	Do.			3	5,147	7,711	2,564 D
	Supole ...	Do.			5	12,016	947	11,069 I
	Modehpore ...	Do.			3	4,775	......	......
	Protabgunge ...	Do.			2	3,575	301	3,274 I
	Kissengunge ...	Do.			1	491	5,637	5,146 D
	Gogri (In Monghyr) ...	Do.		6	2	1,070	692	1,278 I
	Chakye ...	Do.			5	7,237	.....	...
	Jamui ...	Do.			4	6,011	811	5,200 I
	Sekundra	Do.			4	4,557	61	4,496 I
	Shaikpura ...	Do.			5	2,638	......	......
	Surajgurah ..	Do.			1	778	23	755 I
	Beguserai ...	Do.			3	353	610	257 D
Eastern Bengal Circle.†	Dacca thana	Whole	Apothecary A. Lyons, Superintendent, and Assistant Surgeon Durga Das Roy, Deputy Superintendent.	During recess.		166	915	749 D
	Do. Municipality ...	Do.				528	826	298 D
	Barhanuddi (In Backergunge) ...	Do.		2 (One from Noakhali.)	29	6,475	......	......
	Bhola ...	Do.				3,092	......	......
	Patuakholi ...	Do.				608	......	......
	Bauphal ..	Do.				546	......	......
	Mendigunge ...	Do.				722	......	......
	Gourandi ...	Do.				578	......	......
	Noakhali (9 thanas).			6	80	61,560	50,399	11,161 I
	Chandpur (In Tipperah) ...	Do.		...	1	36	22,859	22,823 D
	Choddagram ...	Do.				196	19,069	18,873 D
Behar Circle.	Arrah	Whole	Assistant Surgeon Mothura Nath Sen, Superintendent.	1	9	319	4,512	4,193 D
	Dehri	Do.				1,659	......	......
	Dhangain	Do.		1	10	4,014	4,540	526 D
	Peroo	Do.		1	9	2,643	4,015	1,472 D
	Saseeram	Do.				203	... ..	. ..
	Buxar	Do.		3	28	5,263	8,228	2,965 D
	Mohania	In part				4,365	......	......
	Khargar	Do.				2,162	......	......
	Bhabuah	Do.				404	......	......
	Dumraon ...	Whole				1,771	9,380	7,609 D
	Belowti	Do.				1,556	3,943	2,387 D
Orissa Circle.	Cuttack (In Cuttack) ...	Whole	Assistant Apothecary P. Veeriah Naidu, Superintendent.	1	2	6,925	1,790	5,135 I
	Salipore ...	Do.			4	9,011	2,782	6,229 I
	Kendrapara ...	Do.			4	8,508	3,503	5,005 I
	Aul ...	Do.		1	5	5,735	2,400	3,335 I
	Patamundi ...	Do.			5	6,237	6,900	663 D
	Juggutsingpur ...	Do.		1	5	6,272	110	6,162 I
	Tirtol ...	Do.			5	6,660	407	6,253 I
	Bhudruck in Balasore ...	In part		...	2 (From Cuttack.)	592	......	......
	Baramba (Tributary estates) ...	Whole		...	2	1,685	1,573	112 I
	Nursingpur ...	Do.		...	1	36	......	......
	Ungool ...	Do.		...	1	11,008	......	......

LICENSED AGENCY.

Circles.	Areas of operations: Thanas or Districts.	In whole or in part.	Supervising Officers.	Number of Inspectors, Native Superintendents, Inspecting Vaccinators or Head Vaccinators.	Number of Vaccinators.	Number of operations performed: 1885-86.	1884-85.	Difference.
Ranchi Circle—concluded.	Tamur (In Lohardugga)	In part.	Drs. Waddell and Owen, Superintendents, and Assistant Surgeon Prosonno Coomar Dey, Deputy Superintendent.	2	18	6,015	250	5,765
	Bassia	Do.				3,330	......	......
	Palkot	Do.		...	...	4,093	......	......
	Biru	Whole		1	16	5,740	......	....
	Raido	In part		...	...	785	6,476	5,691 I
	Lohardugga ...	Do.		...	...	90	699	609 I
	In every thana (14 in number) excepting Para and Jheria (In Manbhum)	Do.		1	34	32,671	31,298	1,373
	Bandgram (In Singbhum) ...	Do.		1	13	6,614	13,124	6,510
	Anundpur ...	Do.						
	Kharsonwa ...	Do.						
	Porahat ...	Do.						
	Suranda ...	Do.						
	Saraikela ...	Do.						
	Chyebassa ...	Do.						
	Chukurdburpur	Do.						
	Surgooja (Political Estates) ...	Do.		1	17	8,848	14,486	5,63
	Korea ...	Whole			4	2,511	......	......
	Udaipur ...	In part			6	1,241	......	...
	Jashpur ...	Do.		1	7	3,401	2,150	1,34
	Gangpur ..	Do.			7	3,137	3,574	43
Sonthal Pergunnahs Circle.*	Rajmehal (In Sonthal Pergunnahs) ...	In part	Assistant Surgeon Kasi Nath Ghosh, Superintendent.	1	2	12,031	8,076	3,05
	Rajmehal-Damukoh.	Do.			8			
	Shahebgunge ...	Do.			...			
	Mohespore ..	Do.			4	5,077	13,565	8,48
	Pakour Damukoh	Do.			1			
	Godda ...	Do.		1	10	4,964	8,090	3,12
	Pareya ...	Do.			1			
	Mahagonea ...	Do.			1			
	Deoghur .	Do.		1	2	13,977	23,464	9,48
	Madhupur ...	Do.			3			
	Sarat ...	Do.			5			
	Surat ..	Do.			2			
	Jamtara ...	Do.			6			
	Dumka ..	Do.		1	27	15,856	10,128	5,7
	Supole (In Bhagulpore) ...	Do.		...	2	1,255	....	...
	Protabgunge ...	Do.		...	2	1,908	1,099	8
	Mudheypur ...	Do.		...	1	426	1,926	1,5
	Kissengunge ...	Do.		...	1	365	68	
	Bihipur ...	Do.		...	2	1,236	... ..	...
	Banka ...	Do.		..	1	29	......	..
	Bangaon ...	Do.		...		700	... ..	...
Eastern Bengal Circle.†	Dacca District	In whole	Apothecary A. Lyons, Superintendent and Assistant Surgeon Durga Das Roy, Deputy Superintendent.	1	58	47,775	40,128	7,6
	Faridpore do. ..	Do.		1	39	31,263	38,717	7,4
	Barisal (In Backergunge) ...	In part		1 (From Faridpore.)	1	27	......	..
	Perozepore ...	Do.			1	120	......	..
	Jhalokati ...	Do.			1	408	......	.
	Barhanadi ..	Do.				230	......	..
	Mymensing	Do.		2 (From Dacca.)	75	75,558	70,764	4,7
	Tipperah (remaining thanas).	In whole.		1	38	13,982	13,095	
	Pubna	In part		1	36	40,917	29,772	11,
	Feny (In Noakhali) ...	In part				866	......	.
	Luckhipore ...	Do.				225	......	.
	Sundip ...	Do.				292	......	.
	Hatia ...	Do.				92	......	.
Behar Circle.	Bankipore	In whole	Assistant Surgeon Mothura Nath Sen, Superintendent.	1	8	680	593	
	Dinapore	Do.			2	106	41	
	Futwa	Do.			7	1,325	1,511	
	Manar	Do.			9	930	1,375	
	Barh	Do.			8	2,876	3,294	
	Mokamah	Do.			5	1,435	2,171	
	Malsalami	Do.			1	82	15	
	Behar	Do.		1	9	4,479	2,826	1
	Silao	Do.			6	1,250	601	
	Attaserai	Do.			8	1,236	282	
	Hilsa and Chandi ...	Do.			11	3,717	1,709	2
	Masourhi	Do.			9	1,560	1,094	
	Bickram	Do.			8	1,674	1,508	
Orissa Circle.	Jajpore (In Cuttack) ...	* In 1884-85 by Government Vaccinators.	Assistant Apothecary P. Veeriah Naidu, Superintendent.	1	6	975	2,724	1
	Dhurmsala ...			1	6	1,947	12,442	10

* Operations performed by the Licensed Agency include Recess work.
† Includes Recess work.

The work performed in the several Circles, as exhibited in the above table, summed up, gives the results indicated in the marginal table. This table shows that, although the total number of areas in which operations were carried on, and the total number of operators employed this year, were larger than in the preceding year, there was a very considerable decrease in the number of operations performed, viz., of 114,496 contributed to by the Suburbs of Calcutta and the Ranchi, Sonthal Pegunnahs, Behar and Eastern Bengal Circles, notably by the last-named Circle; that the Metropolitan, Darjiling and Orissa Circles, with additional vaccinators of 38, 10 and 12, respectively, produced excess work represented respectively by 7,208, 23,002, and 10,710 vaccinations; and that 78,274 operations were performed in areas that had not formed the scene of operations during the preceding year.

Circles.	Number of areas taken up in		Staff employed.				Number of operations in areas taken up this year which were not taken up in the preceding year.	Total increase or decrease of operations.	
			Inspectors' Native Superintendents and Head Vaccinators.		Vaccinators.				
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.		Increase.	Decrease.
Metropolitan	170	175	39	39	381	343	3,302	7,208	......
Suburbs of Calcutta ...	14	14	4	4	15	15	......	......	5,737
Darjiling	88	89	12	12	190	180	......	23,002	......
Ranchi	61	68	12	14	187	201	23,926	......	22,546
Sonthal Pergunnahs ...	28	24	13	13	123	142	10,590	......	8,509
Eastern Bengal ...	77	67	12	12	359	329	20,847	......	111,047
Behar	24	19	8	8	147	140	8,863	......	7,577
Orissa	13	14	5	3	42	30	1,728	10,710	......
Total ...	481	470	105	105	1,444	1,380	78,274	......	114,496

190. In the *Metropolitan Circles* arrangements for starting the season's work were made in September, and as the plan on which the operations were carried on was the same as in the preceding year (details of which have been furnished in paragraph 183 of my report for 1884-85), it need not be repeated here. The only difference was that, while during the preceding year some of the thanas were not taken up, this year none were excepted. The work of the *Suburbs of Calcutta* includes 3,574 vaccinations performed in the cooly depôts. Further particulars as to the mode and plan followed here will be found described in a subsequent paragraph of this Report, as they were governed by the provisions of the Compulsory Vaccination Act.

191. In the *Darjiling Circle* the field of work taken up by the Government and licensed vaccinators was the same as that of the preceding year.

192. In the *Ranchi Circle* operations were commenced from the 25th of September, but this early starting of the work was attended by an unusual amount of sickness among the staff, and the sickness was much greater than that which prevailed in the preceding year. About one-third of the men caught malarious fever and were incapacitated from active work during half the season; some of them are still seriously ill, and one of the vaccinators died. The area of work was in jungle tracts, which are notorious for unhealthiness all the year round, but especially in September and October. To the licensed vaccinators were assigned the Hazaribagh and Manbhum districts, the southern portion of Lohardugga, the Singbhum district, excluding the Kolhan and Dhalbhum, and the Political Estates of Surguja, Udaipur, Korea, Jashpur and Gangpur. Hazaribagh has been taken up for three successive seasons by the Licensed vaccinators. Generally in Hazaribagh and in the other districts those portions in which operations were not carried on in 1884-85, or which escaped vaccination in previous years, were taken in hand this year.

193. The Superintendent of the *Sonthal Pergunnahs Circle* says that certain thanas in Bhagulpore and Monghyr were selected for operations this year, because vaccination had either not been introduced into them or were performed before in a very imperfect and perfunctory manner. The former assertion does not appear to be correct, but the latter I regret to say is. I note, moreover, that during even the present season operations were not conducted in the way which had been directed by this office. The Officiating Superintendent, however, was new to the work. He shows that the number of children born in the districts of Monghyr and Bhagulpore is very considerably more than can be vaccinated by his present staff, and he therefore proposes to place the latter district under the Licensed agency system, and to concentrate his staff in completely protecting Monghyr.

194. In the *Eastern Bengal Circle* the district of Noakhalli, one thana in Dacca, six in Backergunge, and two in Tipperah were taken up by the Government agency, and the districts of Noakhalli, Dacca, Faridpore, Mymensing, Tipperah and three thanas in Backergunge were attended to by the Licensed Agency.

195. In the *Behar Circle* the thanas of Bhabuah, Mohaneah, Kargher, Dehri, and Sasseram in Shahabad were newly taken up; the whole of the Patna district was assigned to the Licensed Vaccinators, and 327 operations were performed by the Government staff in the Municipalities of Patna and Jugdispore. It is noted that the licensed vaccinators did not begin work early in the season, because they cannot realise their fees before the harvesting of the paddy crop, the people being mostly of the agricultural class.

196. In the *Orissa Circle* the licensed vaccination scheme was for the first time introduced, and operations under it were carried on from 1st January 1886 in thanas Jajpore and Dhurmsala in Cuttack, the vaccinators having been previously trained to the work for three months, during which they received a subsistance allowance of Rs. 4 each per mensem. The Nursingpur Tributary State was also taken up for the first time, and work at Bhudruck in Balasore was undertaken at the request of the Deputy Magistrate, in order to suppress an outbreak of small-pox.

Plans which determined the conduct of operations in the *Municipalities*.

197. Vaccination was conducted during the year under review in 43 sudder Municipalities, 86 outlying Towns, 4 Cantonments, and 24 Dispensaries. With a few exceptions in which the surrounding villages were taken up, the operations were performed within the limits of these Institutions. In addition, vaccination was extended to the following persons, viz., to the prisoners in the eight jails named in the margin, the operations being performed by the Medical Officers in charge of them; to the employés in the Northern Bengal State Railway stations at Saidpore, Sara, Hilli, Silliguri, Kownea, Parbuttipore, Badergunge, Rungpore, Jatrapore, Julpaiguri, and Huldibari, and to others who resorted to these stations by a licensed vaccinator entertained by the Railway authorities; to the boys in the Mymensing zillah school, Hardinge school and Mymensing institution, by the Civil Surgeon; to the employés in the Chandpur and Dodalia Tea Estates in Chittagong at the cost of their Managers; to the people in the Dhankanal Tributary Mehal in Cuttack at the cost of the Estate; to the people in the Ullapore pergunnah within a radius of 10 miles, and in Narail in Durbhunga, at the cost of the Durbhanga Raj; and to the people in Hatwa, Bhori and Gopalgunge and in the surrounding villages at the cost of the Hatwa Raj. The table in the margin shows the number of operations which were performed in the above-named Institutions and places. Of the operators, 20 were licensed vaccinators. Many of the Sudder Municipalities were divided into sections, and vaccination carried on in one section methodically and exhaustively before another was taken up. In the outlying Municipalities operations were carried on, on the whole, desultorily without any regard to system. The great drawbacks to municipal vaccination are that, with few exceptions, the staff of operators employed is not commensurate with the area required to be protected, and that almost everywhere the vaccinators are engaged for only the vaccinating season; in some municipalities for only three, two, or one month. The following facts connected with municipal vaccination deserve mention. The vaccinator in *Sherpur* in Mymensing was not paid a single pice during the whole season he was at work, and the consequence was that vaccination suffered in this town. A plan was followed in the *Jalpaiguri town* of making the vaccinator submit an account of his work daily, and of publicly informing the people that they have nothing to pay for having themselves and their children vaccinated. In the town of *Dumka*, as there was no vaccinator employed, the unprotected persons, with their guardians if they were children, were, once a

Jessore.	Mymensingh.
Khulna.	Noakhalli.
Julpaiguri	Motihari.
Faridpore	Arrah.

Areas.		Number of operators.	Number of operations performed.
Sudder Municipalities	...	81	44,937
Outlying Towns ...	...	104	31,591
Cantonments ...	...	4	1,244
Dispensaries ...	...	22	4,028
Jails ...	...	8	260
Other places ...	...	7	2,762
Total	...	226	84,822

week, brought to the dispensary by the town chowkidars and vaccinated by the Civil Hospital Assistant after a list of the unprotected had been made out. The Medical Officer of the Serajgunge town advocates the introduction into it of the Compulsory Registration Act, as without a record of births and of deaths of children it is difficult to find out the unprotected children. In the *Nasirabad* Municipality in Mymensing vaccinations were performed in a desultory way, the subjects being those who volunteered to be vaccinated, or unprotected children seen in the streets and followed to their homes and there vaccinated, together with such of their neighbours as were within reach. The operators were the Dresser and Compounder of the Dispensary, and as they were paid one rupee for every 10 operations, and had their other duties to perform, better work could not be expected. This plan will not be reverted to next season. In the *Jamalpore* Municipality in the same district the Civil Hospital Assistant was allowed Rs. 10 for every 100 vaccinations performed by him, but this Officer would rather that the Municipality employ a regular vaccinator, when it would get more work than he can give with his other duties, the Municipality being a very extensive one. In the *Cox's Bazar* Municipality in Chittagong vaccination proved an utter failure, chiefly owing to the Assistant Surgeon not carrying out in time the orders he received to make an attempt to introduce vaccination. He was not provided with an establishment, but the work could have been carried on in the dispensary. In the *Faridpore* Municipality a Licensed Vaccinator was employed, but most of the people exhibited unwillingness to pay for his services. As the people pay Municipal taxes, the Municipality should employ a paid vaccinator. The Civil Surgeon of *Chumparun* observes that vaccination will continue to remain in an unsatisfactory footing in the towns in Chumparun, unless the Compulsory Vaccination Act is introduced. He adds that the Municipal Committees have a certain sum at their disposal for sanitary works, and that it cannot be better employed than in securing efficient vaccination.

No vaccination was carried on in the Satkhira, and Chanduria Municipalities in Khulna; in Netrokona in Mymensing; and in Bhowara in Chumparun.

Degree of Protection *afforded* in the Vaccination Circles.

198. *Calcutta.*—The Superintendent says that the amount of protection afforded to this town cannot be stated definitely, as it depends on the nature of the population, for reasons explained in the last year's report; but vaccination was carried on with great vigour in every quarter of the town throughout the year, no ward being left untouched.

199. *Metropolitan Circles.*—From a statement furnished by the Superintendent it appears (1) that the thanas marginally named have been fully protected; (2) that the whole of the thanas in the 24-Pergunnahs and Jessore districts have been nearly fully protected, excepting 1,110 families in 10 villages in thanas Bagarpara, Mamudpur, Kalia and Lohagura in the latter district; (3) that, eliminating the thanas marginally cited, the rest of the thanas in the Nuddea, Murshidabad and Howrah districts have also been nearly fully protected, excepting that in Nuddea 350 families in six villages in thanas Karimpur and Damurhuda, in Murshidabad 541 families in 13 villages in thanas Gorabazar, Gowas, and Shamsherganj, and in Howrah 773 families in 22 villages in thanas Jagutbullubpur, Amta, Bagnan, and Shampur are altogether unprotected, and that in Murshidabad thanas Dewanserai, Gokurnu, Kallyanganj, Mirzapur, Khargram, and Kandy have been partially protected; (4) that similarly all the thanas in Burdwan, Khulna, Bankura, and Hughli have been nearly protected, with the exception that in Burdwan thanas Culna, Ganguria, and Selimabad, and in Bankura thanas Bishenpur, Gungajulghati, Bankura, Onda, and Sonamukhi have been partially protected; and that in Khulna 570 families in 8 villages in thanas Bagirhat, Mollahat,

FULLY PROTECTED.

Districts.	*Thanas.*	*Districts.*	*Thanas.*
Nuddea ...	Kishnaghur. Chogdah. Chuadanga. Hanskhalli. Kissenganj. Chapra. Kaliganj. Gangni. Alamdanga. Kalupole. Jebunnugger. Santipur.	Murshidabad ... Birbhum ... Howrah ...	Jelinghi. Manullabazar. Bhagwangola. Nowada. Sagardighi. Sakolipur. Uluberia.

and Morelganj; and in Hughli 802 families in 12 villages in thanas Dhonakhalli, Bolagur, Panduah, Haripal and Chunditolla are entirely unprotected; and (5) that in Midnapur and Birbhum all the thanas, excepting Gurbetta in the former, which is entirely unprotected, and Ramporehat in the latter, which has been nearly fully protected, have been only partially protected. Moreover, in Midnapur so many as 12,400 persons in 820 villages in 15 of the thanas are altogether unprotected. It thus appears that the whole of Nuddea has been best protected, and 24-Pergunnahs, Jessore, Murshidabad, Hughli, Khulna, and Burdwan in the next degree; and that Midnapore, Birbhum, and Howrah have been most backward, notably Midnapore.

200. *Suburbs of Calcutta.*—From the following statement made by the Superintendent, it would appear that the Suburban Municipality has been nearly thoroughly protected. He says that comparatively a very small number of children are unprotected, as during his inspection of the *bustis* he could not find a single unvaccinated child, excepting a few who were not permanent residents. But according to an estimate made by him it would appear that out of the 5,853 births reported during the year, vaccination had not reached 1,951 children, and these children, excepting such as had died, it is evident must have been removed from jurisdiction by their parents or guardians upon receipt of notices calling upon them to have them vaccinated.

201. The Superintendent of the *Darjiling Circle* says that thorough protection of an area in the Darjiling district is temporary, because immigration of unprotected individuals is constant, but in the whole circle there is no area which is left untouched. He reverts to the question of an exhaustive vaccine census of a defined area as a means of ascertaining the amount of protection afforded, which however, in my opinion, can be sufficiently accurately known from the census population of villages and the records of vaccination. The taking of a census for this purpose would be a useless waste of time and money.

202. The report of the Superintendent of the *Ranchi Circle* states that no thana has been thoroughly protected, but that the whole circle has been partially protected, excepting a few isolated villages, such as Dandila and Gadwana in thana Patan, and six small hamlets in the remote east of perguna Tari in Lohardugga; and that protection in the Palamow sub-division in Lohardugga is the most advanced. But from the report of the Deputy Superintendent, it appears that the Tundwa thana in Manbhum and small portions of the thanas named in the margin in the same district and in Singbhum have been thoroughly protected, and that the remainder of the above-named districts and the whole of the districts of Hazaribagh and Lohardugga, with the undernoted exceptions, have been partially protected. The areas not yet protected are said to be two or three villages in thana Chuckurdhurpur and in the Kolhan in the district of Singbhum, and some villages in Hazaribagh and Lohardugga. But on this statement the Superintendent remarks that under the purely persuasive system at present in force in carrying out vaccination, the adult portion of the population do not, as a rule, accept vaccination, and consequently a considerable portion of them not having had small-pox, as well as several children in the areas said to be thoroughly protected, have escaped vaccination. From personal inspection in the Manbhum and Hazaribagh districts during the working season, I was convinced that the amount of protection given in these districts is very partial and insufficient.

In Manbhum.	*In Manbhum*—concld.
Nirsha.	Govindpur.
Chass.	Bagmoondi.
Topechansi.	*In Singbhum.*
Jhalagur.	Seraikela.
Purulia.	Chuckdhurpur.

203. *Sonthal Pergunnahs Circle.*—No portion of the circle has, it is said, been thoroughly protected. Operations have been carried on in every thana in the circle, and those named in the margin may be said to be almost thoroughly protected, while the remaining thanas have been partially protected. Thanas Shaikpura, Teghra, and the outpost of Borhye in Monghyr, and several villages in the Rajmehal sub-division, which had been hitherto untouched were taken up this year.

In Bhagulpur district.	*In Sonthal Pergunnahs district.*
Mudehpura.	Rajmehal, including Daminikoh.
Soopol.	Mohespur.
Protabganj.	Sarat.
In Monghyr district.	Jamtara.
Jamui.	Dumka.
Chakye.	Godda.
Sekundra.	

204. The report from the *Behar Circle* is to the effect that the Arrah, Belowti, Dumraon, Peroo, Buxar and Dhangain thanas, and the Nokha outpost in Kargher, Nusriganj outpost in Dehri, and Novi outpost in Mohania in the Shahabad district, and the Patna district have been fairly protected; that the remaining thanas in Shahabad have been partially protected; and that the areas not yet touched are Chumparun and the districts of Durbhunga, Mozufferpur, Sarun and Gya. Thus in 11 years not one district or part of a district has been thoroughly protected from small-pox. This shows that the establishment, as at present constituted, cannot overcome the difficulties of introducing vaccination into Behar.

205. The Superintendent of the *Orissa Circle* reports that only the Jajpur and Dharmsala thanas in Cuttack, which had been made over to Licensed Vaccinators this year, appear to have been thoroughly protected, new-born children and adult females being excepted; that the localities named in the margin have not yet been vaccinated; and that the remainder of the circle, including the areas taken up this year, have been partially protected. This statement indicates that too large an area was taken up this year, and that none of it was thoroughly vaccinated, the result of the vaccinators not having worked near enough together.

In Balasore.
Sorah ... ... } Thanas.
Baliapal ... ... }
Basudebpur ... }

In Puri.
Bhuboneswar ... } Outposts.
Chumpagur ... }

206. Under this head I have only to mention that to the list of Municipalities and Towns thoroughly protected and fairly well protected, furnished in paragraph 202 of my report for 1884-85, may be added for the year under review, the Chaibassa Municipality under the former category, and the Khulna Municipality under the latter, and that vaccination has so far progressed in the towns of Bhuddressur, Khirpai, Bogra, Jalpaiguri, Purulia, and Patna as to entitle them to be classed as fairly well-protected areas.

Degree of protection in the Municipal area.

207. As usual, humanised lymph was obtained from all the circles, and, in addition, bovine lymph from the Metropolitan circles, and distributed by this office to the Municipalities, Dispensaries, &c., in the Province. The demands of private parties and from many localities out of the jurisdiction of Bengal were also attended to. In the *Metropolitan circles* only bovine and in the *Ranchi* circle only humanized lymph was employed. In *Calcutta* and in all the other *Vaccination Circles*, and in a large number of the *Municipalities* and *Towns* both classes of lymph were used. In *Calcutta* bovine lymph taken from 120 vaccinated calves sent from the Suburban Central Depôt to four of the vaccine stations principally was extensively employed, and the demand for this virus in private houses had also greatly increased. Thus 2,625 persons were vaccinated, after which the operations, numbering 9,740, were continued by the arm-to-arm process. In the *Metropolitan circles* lymph taken directly from calves was distributed in tubes to the Inspectors for the establishment of virus in their respective circles. The first supplies invariably failed, and a second and in some cases a third supply had to be sent before the virus was established. One thousand three hundred and thirty-nine persons were vaccinated direct from the calf. When the virus was once established, it was kept up by arm-to-arm vaccination. In all 245 calves were vaccinated: 39 for the suburban depôts, 120 for the Calcutta depôts, and 86 for lymph to be stored in tubes. Five thousand two hundred and ten tubes of lymph were supplied to my office for distribution, and 5,474 despatched to different parts of the country on the requisition of public officers and private parties. In the Suburbs of Calcutta humanized lymph was employed during the recess. In Midnapore and Bankura great difficulty is felt in maintaining arm-to-arm vaccination owing to the objection of the people to part with the virus from the arms of their children, the general belief being that the children will sicken and die if this is done. For this reason also, and owing to outbreaks of cholera causing the death of the vaccinifers when they were procurable, great difficulty was experienced in the *Darjiling* Circle in keeping up the lymph supply in the plains. In the *Orissa Circle*, two calves and some persons were vaccinated with bovine lymph sent from this office, and from the vesicles which appeared, arm-to-arm vaccination was carried on. The lymph from the calves was also stored

Source and character of Lymph employed during the year.

in tubes and distributed to the vaccinators for carrying on operations in their respective areas.

Crusts were used in the Darjiling and Chittagong towns, as objections were made to part with lymph from the arms of children. For the same reason lymph in glasses and tubes was used in some cases in the *Behâr* Circle. Many of the vaccinators in the *Ranchi* Circle used crusts for no assigned reason. In the Goalundo Municipality arm-to-arm vaccination was not permitted, but virus was preserved in tubes for vaccination. The result, it is said, was a large rate of success.

Number of operations performed with *Bovine Lymph*, with results.

208. The non-success of operations with Bovine Lymph in tubes was very general this year, but the failure occurred mainly in the Municipalities, and in them the instances were many where the first supply having failed, further trials were abandoned. Favourable and adverse opinions with regard to the value of the virus were, as usual, recorded, the former predominating this year, and the causes of the failures mentioned in my former reports were again repeated. But these non-successes do not, I submit, militate against the scheme if we bear in mind the large success that has always attended the trials made with this virus in Calcutta and in the Metropolitan and Sonthal Pergunnahs Circles. It appears to me that repeated and extended trials and greater care in storing the virus are required. An important fact, which the experience of this year disclosed, should also be taken advantage of, viz., that bovine lymph stored and used after the cold weather has well set in generally succeeds. I think, moreover, that, in order to attain thorough success, it would be a wise plan to have calves vaccinated locally in all the vaccination circles. The attendant expenditure cannot be great; the existing establishment can do the work; the expense will be only for calves and contingencies, once for all for establishming a lymph supply. A good plan for all places easy of access to Calcutta by rail or water is that which was adopted in the Serampur Municipality, which is to send a child or two to Calcutta to be vaccinated direct from the calf; and with the virus thus obtained to carry on arm-to-arm vaccination.

During the year I received a communication from Dr. Waddell, sending me an extract from the *London Medical Record* containing observations on the use of certain antiseptics for preserving vaccine lymph. I forwarded the papers to Dr. Gupta, requesting him to give a trial to the suggestions made in them, as I thought that anything done in this direction might prove useful, and that at least some experiments on the use of tubes first sterilised by heat and then washed in a weak solution of corrosive sublimate were well worthy of trial. It appears that some experiments were made by this Officer, but I have not been favoured with the results, nor are they to be found among the records of the Metropolitan Circle Office. However, in the interests of vaccination, I think it useful to record below the extract above referred to, with Dr. Waddell's observations thereon:—" Dr. Richard Pott, who is demonstrator of childern's diseases at Halle, gives a valuable contribution to our knowledge of this subject (*Archiv fur kinder heilkunde, Band, IV, Heft II*). The antiseptics used were carbolic acid, salicylic acid, borax, and thymol; and the solutions were in all cases mixed with the lymph in equal proportions, and either employed directly or sealed in tubes, and reserved for subsequent experiment. The vaccination was always primary and the lymph always humanized. In nearly all cases, each arm was vaccinated in five places. Fresh carbolised lymph (*i.e.*, that under four weeks old) gave the following results. Mixed with a 1 per cent. solution of carbolic acid, it was successful seven times out of eight; with 2 per cent. solution, only once tried, and successfully; 3 per cent. tried sixteen times, successfully in all; with 4 per cent., successful eleven times out of nineteen; 5 per cent., tried six times, and always failed. The admixture of the last solution produced a cloudiness in the lymph owing, perhaps, to coagulation of the albumen. By longer contact with the antiseptic, the lymph appeared to lose its power. Experiments with carbolised lymph, from 6 to 12 months old, gave the following results. A 1 per cent. solution was successful only five times out of eleven. Two per cent., 3 per cent., and 4 per cent. solutions were tried respectively four times, twice, and once without a single successful result. The course of the vaccinia which was produced by fresh carbolised lymph was carefully watched, and was found to differ in no respect from that

of ordinary vaccinia. *Salicylic acid* was used in one-third per cent. solution; and, when fresh, the lymph was successful in fifteen out of seventeen cases, but when from six to twelve months old it was useless. *Borax* in $3\frac{1}{2}$ per cent. solution was employed fresh in thirteen cases, all of which were successful; and the stale mixture was effectual in seven out of eleven cases. The author considers, therefore, that a solution of borax is the best means of diluting lymph when the quantity is limited. One child, however, vaccinated with this admixture, developed on the ninth day a roseola extending all over the body and limbs, and accompanied by slight fever. At the end of three days it had disappeared. *Thymol* (strength not given) was mixed with lymph and used fresh in thirty-eight cases, of which all but two were successful. The author followed up the cases, and from daily observations convinced himself that the vaccinia thus produced followed its typical course. For further researches with this antiseptic, he refers to the experiments of Stern. In conclusion, the author says that aseptic lymph of proper strength and freshness has the advantage of being more fluid and of going twice as far as ordinary lymph."

Dr. Waddell remarks:—" Although recommending the use of aseptic lymph, Dr. Pott does not consider that it really *preserves* the lymph so as to allow of its being kept for a very much longer time. The very latest observations on the action of antiseptics on bacteria are *à priori* against the practicability of preserving lymph against ordinary putrefactive decomposition by means of aseptic agents, such as bichloride of mercury, &c., which are very much more powerful and certain in their action than carbolic acid or borax. These recent observations show that pathogenic bacteria—even so resistent ones as anthrax-bacilli—are very much more readily killed by aseptic agents than ordinary putrefactive bacteria are. So that to ensure the killing off of all putrefactive bacteria, so large a quantity of the disinfectant must be added that the specific activity of the pathogemic fluid must be destroyed. In the operation of taking up lymph from a vaccine vesicle, ordinary putrefactive bacteria must, in practice, gain entry into the fluid—falling into it from the air as the lymph is being exuded, or derived from the inside of tube or clinging to point of tube, or from the cuticle over the vesicle. In ordinary practice it is quite impossible to obtain lymph which is devoid altogether of putrefactive germs. The only way to guard against decomposition would be to use sterilised capillary tubes, and introduce these directly into well-formed vesicles (thus losing a very large amount of material), and even in this case the total absence of putrefactive germs would not necessarily be assured, for in many cases they have already made their way into the vesicle."

Dr. ffrench Mullen thinks that stained tubes might prevent any injurious action which light may have on the lymph.

The subjoined table shows the number of vaccinations performed with bovine lymph during the year, and the results. It includes the figures of those Municipalities where proper trial was accorded to the scheme:—

Description of virus.	Circles.	Number of areas.	Total number vaccinated.	Primary.		Revaccination.		Percentage of successful cases to total vaccinated with bovine lymph.	
				Total number vaccinated.	Number successfully vaccinated.	Total number vaccinated.	Number successfully vaccinated	Primary.	Revaccination.
Direct from Calf	Calcutta	......	2,625	2,081	1,903	544	89	91·44	16·36
	Central Depôt in the Suburbs of Calcutta	......	1,330	1,223	1,128	116	50	92·23	43 10
	Total ...	......	3,964	3,304	3,031	660	139	91·73	20·90
With Calf Lymph in tubes.	Sonthal Pergunnahs...	......	49	49	47	......	......	95·91	......
	Orissa	......	68	68	51	......	......	75·00	.....
	Behar	......	12	12	6	......	......	50 00	....
	Municipalities ...	18	3,168	3,144	2,667	24	18	84 82	75 00
	Total ...	......	3,297	3,273	2,771	24	18	84 66	75 00

Description of virus.	Circles.	Number of areas.	Total number vaccinated.	Primary. Total number vaccinated.	Primary. Number successfully vaccinated.	Re-vaccination. Total number vaccinated.	Re-vaccination. Number successfully vaccinated.	Percentage of successful cases to total vaccinated with bovine lymph. Primary.	Percentage of successful cases to total vaccinated with bovine lymph. Re-vaccination.
By Arm-to-arm transmission of Bovine Lymph.	Calcutta	1	9,740	8,990	8,273	750	78	92·02	10·40
	Suburbs of Calcutta ..	1	12,705	9,306	8,617	3,399	1,731	92·59	50·92
	Metropolitan	176	373,347	373,243	372,324	104	51	99·75	49·23
	Darjiling	8	1,864	1,864	1,820	......	......	97·63	......
	Sonthal Pergunnahs ...	22	47,014	47,014	46,944	......	......	99·85	......
	Orissa	8	3,364	3,364	3,122	......	......	92·80	......
	Behar	4	1,009	1,001	990	8	......	98·90	......
	Municipalities	6	7,806	7,768	7,394	38	19	95·18	50·00
	Total ...	226	456,849	452,550	449,484	4,299	1,879	99·32	43·70
	Grand Total of vaccination Circles	220	453,136	448,215	445,225	4,921	1,999	99·33	40·62
	Grand Total of Municipalities	21	10,974	10,912	10,061	62	37	92·20	59·67
	Grand Total of both	241	464,110	459,127	455,286	4,983	2,036	99·16	40·85

The above figures indicate chiefly that of 3,304 primary operations with lymph taken direct from the calf, 91·73 per cent. proved successful; that of 3,273 operations in which tube lymph was employed, 84·66 per cent. were successes, the Municipalities yielding 84·82 successes and the Sonthal Pergunnahs exhibiting the highest rate, viz., 95·91 per cent.; that by the arm-to-arm transmission of the lymph, of 452,550 primary cases, 99·32 per cent. proved successful, the Municipalities showing 95·18 successes and the Metropolitan and Sonthal Pergunnahs Circles giving the best result; and that the total results of the year by all three processes are represented by 459,127 operations attended by 455,286 successes, or at the rate of 99·16 per cent. In re-vaccinations the varying successes are on a par with those attained by the employment of humanized lymph. I submit that this record indicates that the results realized by vaccinating direct from the calf and by the arm-to-arm process are very satisfactory, and that those obtained by the employment of lymph stored in tubes are, on the whole, fair.

Local opinions on the value of Bovine Lymph.

209. The following is a resumé of the opinions on the subject submitted by the local officers who employed bovine lymph during the year in conducting vaccinations. To avoid lengthening the report I have selected for notice only the well-defined, positive and important observations:—

Calcutta.—Dr. Sanders notes that while at times the vesicles were very typical and almost identical with those obtained from humanized lymph, the instances were not few in which they were small with many failed points, and ran an irregular course; and that in a great many cases there occurred failures. There were failures also after the second operation, and humanized lymyh had to be used. This the Superintendent says is to be greatly regretted; the animal virus is not only safer and more convenient, but it is also greatly preferred by the intelligent classes, both Native and European. Nevertheless, the above table shows that when it did take, the success was satisfactory, for the primary operations gave 91·44 per cent. of successes, and the re-vaccinations 16·36 per cent.

Metropolitan Circles.—The Officiating Superintendent observes that failure in one or two points in operations with bovine lymph was more frequent this year. This he attributes to the incisions having been made in the transverse instead of in the usual vertical direction of the arm; but he notes that when the case is thoroughly successful, the vesicles produced seemed to look more natural and altogether more healthy than equally successful cases in which humanized lymph had been used.

Sonthal Pergunnahs.— The Superintendent of this circle watched the cases personally in their different stages of growth and development, as also the cicatrices after the falling off of the scab, and he pronounces the character and quality of the vesicles to be quite typical and satisfactory; and he is of opinion that fresh bovine lymph acts in a similar manner to good humanized virus, but that the operations performed with the former are attended with a greater degree of constitutional and local irritation manifested by stronger fever and more fully developed areola. It was noticed that all the operations in the Colgong, Shahebganj, and Deoghur towns proved successful.

The Superintendent of the *Behar* Circle states that when the lymph was clear and transparent in the tubes it proved successful, and that in all the cases the

fever was high and the vesicles typical. He is of opinion that clear bovine lymph in tubes is superior to humanized lymph in tubes.

Orissa Circle.—The operations with bovine lymph were more extensively performed in this circle during this than during the preceding year. Mr. Naidu, the Superintendent, says that he has examined most of the operations, and that in every case he found the vesicles more characteristic and typical than those obtained by humanized lymph.

Dr. Barker, the Civil Medical Officer of *Scrampore*, perceived no difference between the manifestations of bovine and human lymph. He thinks the former is more likely to be pure and free from contamination. Dr. Russell, the Civil Surgeon of *Nuddea*, continues to hold to his opinion expressed in his last report, which is briefly, that bovine lymph requires to be used direct from the vesicles of the calf if satisfactory and certain results are to be obtained. But a remarkable point in this year's experiments is that two children, who had been vaccinated with bovine lymph in tubes, but on each arm of whom only a single, partial, delayed vesicle arose, on being afterwards re-vaccinated by the arm-to-arm process, had each four good vesicles which ran a regular course and attained an ordinary development, which led Dr. Russell to the conclusion that no protection was apparently conferred by the single imperfect vesicle. Dr. Hendley, Medical Officer, Northern Bengal State Railway, reports that, so far as his experience extends, it leads him to believe that bovine lymph is successful in more cases than humanized lymph, and that comparing the successful cases with both kinds, no difference could be seen. This year with 30 tubes of the latter not one case succeeded, so that crusts had to be resorted to, but with 40 tubes of the former, 18 gave successes. The Assistant Surgeon of *Madhubani*, in Durbhunga, considers, so far as he can judge, that bovine lymph is as potent and effective as humanized lymph. The vesicles "assume a more threatening appearance, the fever is greater in severity, and the lympathetic glands in the majority of cases are very much swollen and inflamed. These circumstances may seem to show that the system is more affected, and consequently more protected when vaccinated with bovine lymph than with the other kind of lymph." The success which attended the operations with bovine lymph this year has induced Dr. Dutt, the Civil Surgeon of Rungpore, to alter his hitherto unfavourable opinion with regard to it, seeing that the percentage of successful cases was 89·10 by bovine lymph against 86·88 by humanized lymph. He believes the lymph of this year was of better quality and more carefully stored, and he says that "such bovine lymph as I received during the year under review may well hold to its own against humanized lymph, if it is not indeed superior to it." In the *Comillah* and *Durbhunga* Municipalities, and in the Naraya Dispensary in Durbhunga, all the operations with bovine lymph in tubes proved successful. The Civil Hospital Assistant of the last-named institution says that from his long experience he is satisfied that bovine lymph is better than humanized lymph.

210. From the marginal table, exhibiting the work of the year, it will be seen that the aggregate number of operations performed, amounting to 1,368,996, was less than those of the preceding year by 119,300; that to this reduction both the Vaccination Circles and the Municipalities contributed—the former, where the operations numbered 1,284,174, to the extent of 118,086; and the latter, where 84,822 vaccinations were performed, to the extent of only 1,214; and that the work of the circles

WORK OF THE YEAR.

Total number of Vaccinations performed.

	Total number of Operations performed.		Difference.	
	1885-86.	1884-85.		
Calcutta ...	12,366	15,956	—	3,590
Metropolitan Circles ...	373,347	366,139	+	7,208
Suburbs of Calcutta, including Operations in Central Vaccination Depôt ...	14,044	19,781	—	5,737
Total of Metropolitan Circles ...	387,391	385,920	+	1,471
Darjiling Circle ...	252,562	229,560	+	23,002
Ranchi " ...	126,426	148,972	—	22,546
Sonthal Pergunnahs Circle ...	114,5382	123,048	—	8,509
Eastern Bengal Circle ...	286,031	397,079	—	111,047
Orissa Circle ...	57,68	46,971	+	10,710
Behar " ...	47,178	54,755	—	7,577
Total of Vaccination Circles ...	1,284,174	1,402,260	—	118,086
Municipalities, Dispensaries, &c. ...	84,822	86,036	—	1,214
GRAND TOTAL ...	1,368,996	1,488,296	—	119,300

individually considered indicate improvement on the side of the Darjiling, Orissa and Metropolitan Circles, and retrogression on that of the Eastern Bengal, Ranchi, Sonthal Pergunnahs and Behar Circles, the Suburbs of Calcutta and Calcutta in the order named.

The diminution of work was attributed to the following causes:— In *Calcutta* (1) to paucity of subjects, house-to-house enquiry having shown that there was a great reduction in comparison with the preceding year of unprotected infants and children; and (2) to smaller number of operations in the Port, it being remembered that the Native Floating Population is a fluctuating one and always on the move. In the *Suburbs of Calcutta.* (1) To the efficient manner in which the Compulsory Vaccination Act was worked under the superintendence of Dr. Ghose in 1884-85. This curious statement involves the fact that the Enactment in question was worked less efficiently this year; but it should be added that efficiency was certainly maintained with regard to the vaccination of children under one year, for here an increase of 852 operations is seen. (2) To vaccinations in the central vaccine depôt having been except in very rare cases, stopped. (3) To the Calcutta Corporation and the Suburban Municipality performing operations through their own establishment from vaccinated calves supplied them, while in the preceding year the people resorted to the vaccine depôts to be vaccinated. (4) To there having been a lesser number of coolies at the depôts for emigration, the number being always a fluctuating one. *Ranchi Circle.*—In Lohardugga and Hazaribagh, to a smaller number of operators employed this year; to insufficient supervision for want of more inspecting vaccinators; to paucity of unprotected children, particularly in the Palamow Sub-division, where the vaccinators not unfrequently found only one or two unvaccinated children in each village, often none; and, most of all, to the early closing of work, to allow of the early submission of the Annual Report within the prescribed period. In Singbhum, to reduction in the number of operators from 19 to 13, and to the serious illness of half this number compelling them to abandon work about the middle of the season. In the Kolhan to the vaccinators working under great disadvantages and hardship owing to their not getting their pay monthly, as the police, who used hitherto to disburse it to them, having refused to do so this year; to dearth of water at times; in some places even salt and mustard oil not being procurable. With regard to the plea of paucity of children, I should say that my observations in Hazaribagh impressed me with the belief that the protection afforded to the district was very defective. In the *Behar Circle* (1) to unusual prevalence of fever in Shahabad during September, October and November retarding work; (2) to most of the vaccinators having suffered from fever, some so badly as to take sick leave, of whom 1 died; and (3) to opposition to vaccination in the thanas in Shahabad newly taken up, the resistance going to the length in some cases of assaulting the vaccinators. In the *Eastern Bengal Circle* to various causes, chiefly (1) to an inoculator having worked in Dhakin Shabazpur year by year, so that when vaccinators were deputed to it this year, they found only infants and children unprotected, whom the people were exceedingly averse to get vaccinated from fear of evil results; (2) to the areas taken up being thinly populated; and (3) to having to contend against vigorous opposition by the Ferazis, who muster strong in the areas in Noakhali which were taken up. But these causes insufficiently account for the large decrease of work, represented by 111,047 operations, which took place. The causes of decrease of work in the *Sonthal Pergunnahs Circle* have not been furnished.

Recess work.

211. During the recess 12,523 operations were performed in almost all the thanas in the *Metropolitan Circles;* 6,122 in the *Suburbs of Calcutta;* 4,873 in the Rajshahye, Dinajpur, Rungpore and Maldah districts in the Darjiling Circle; 2,540 in some thanas in the Hazaribagh, Lohardugga and Manbhum districts in the *Ranchi Circle;* 10,312 in some villages in the Bhagulpore, Monghyr and Sonthal Pergunnahs districts in the *Sonthal Pergunnahs Circle;* 12,411 in the Noakhali, Dacca, Faridpore, Pubna, Mymensing, Tipperah, and Backerganj districts in the *Eastern Bengal Circle;* and 1,878 in some thanas in Shahabad and Patna in the *Behar Circle.* No such operations were reported from the *Orissa Circle.* This work was performed to maintain lymph and to stamp out outbreaks of small-pox.

212. In this year 801 Municipalities returned reduced work against 63 which exhibited improvement. The causes accounting for the diminution are many, but the chief of them are inefficiency and laziness of the operators and insufficient and perfunctory supervision. Lateness in establishing virus to commence the year's operations, owing to failures of the early supplies of lymph both bovine and humanized, particularly the former, no doubt precluded a larger number of vaccinations being performed.

Increase or decrease of Vaccinations in Municipalities.

Number of Primary and Secondary operations, and rates of success under both heads.

213. This information is furnished in the subjoined table:—

CIRCLES.	PRIMARY.						SECONDARY.						INCREASE OR DECREASE IN PERCENTAGE OF SUCCESSFUL CASES IN 1885-86.	
	Total number of operations in		Number of successful operations in		Ratio per cent. of successful cases in		Total number of operations in		Number of successful operations in		Ratio per cent. of successful cases in		In primary operations.	In secondary operations.
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.		
alcutta	11,071	13,420	10,176	12,871	96·36	98·58	1,294	2,535	167	283	14·68	13·20	2·22 D	1·48 *I*
letropolitan Circles	373,243	365,781	372,324	364,807	99·83	99·79	104	358	51	208	49·03	58·75	·04 I	9·72 *D*
uburbs of Calcutta, including Central Vaccine Depôt and Coolie Depôt.	10,529	12,392	9,745	11,490	97·47	97·91	3,515	7,389	1,781	3,450	50·75	53·60	·44 D	8·15 *I*
otal of Metropolitan Circles ...	383,772	378,173	382,069	376,387	99·77	99·73	3,619	7,747	1,832	3,658	56·63	53 87	·04 I	2·76 *I*
arjiling Circle	252,543	229,506	250,521	227,067	99·87	99·90	19	54	8	27	42 10	50·	·03 D	7·90 *D*
Ranchi "	126,306	148,963	124,834	144,600	99·68	99·12	120	9	80	9	66·66	100·	·56 I	33·34 *D*
onthal Pergunnahs Circle ...	114,527	122,856	114,205	122,036	99·74	99·61	12	192	1	133	8·33	73·07	·13 I	64·74 *D*
astern Bengal " ...	285,975	397,079	285,142	396,702	99·82	99·93	57	......	20	......	35·71	.... .	·11 D	.....
rissa " ...	57,681	46,051	54,786	45,917	95·29	98·23	......	20	......	20	......	100·	2·94 D	... .
ehar " ...	47,092	54,650	46,446	53,968	99·16	99·25	86	105	21	33	24·41	32·03	·09 D	7·62 *D*
otal of Vaccination Circles ...	1,278,967	1,391,598	1,268,179	1,379,608	99·54	99·66	5,207	10,662	2,129	4,163	47·78	44·75	·12 D	3·03 I
Iunicipalities, Dispensaries, &c.	82,814	83,904	77,078	77,497	94·51	94·72	2,008	2,132	1,259	1,326	65·33	63·75	·21 D	1·58 I
GRAND TOTAL ...	1,361,781	1,475,502	1,345,257	1,457,105	99·23	99·38	7,215	12,794	3,388	5,489	52·01	48·22	·15 D	1·69 I

From the above figures it is seen that there was a decrease in the number of primary vaccinations amounting to 113,721 operations, which was borne by the Vaccination Circles to the extent of 112,631 operations, [the bulk (111,104) of the diminished number being contributed by the Eastern Bengal Circle] and by the Municipal Area to the extent of 1,090 operations. In re-vaccinations there was a total diminution of 5,579 operations, most of which (3,874) having occurred in the Suburbs of Calcutta. Increase or decrease in this class of operations is dependent in a great measure on the presence or otherwise of Small-pox. The figures representing the percentages of success which attended the primary operations indicate that, with small variations in comparision with the figures of the preceding year, approved rates of success were returned. The cause of depreciation in primary successes in Calcutta is said to be due to the results of a very large number of the station vaccinations not having been ascertained. There is no explanation from the Suburbs of Calcutta. The rates of success in re-vaccinations seen in the above table point to the suspicion that the cases were not re-vaccinations; and indeed the Superintendents of the Metropolitan and Ranchi Circles, where these ratios were exceptionally large, support this view of the matter; for the former says that the operations were performed on persons who had been unsuccessfully inoculated, or on those who had suffered not from small-pox, but from chicken-pox or measles; and the latter that the subjects vaccinated had no marks to indicate that their statement that they had been inoculated was correct, and that several of the old men who were vaccinated had been inoculated in their childhood. The Deputy Superintendent of the Suburbs of Calcutta notes that he has found that in the majority of instances previous inoculation does not prevent vaccination proving successful.

214. The marginal table furnishing this information shows that the best outturn of work was achieved by the vacciators in the Orissa and Darjiling Circles, the worst by those in the Behar Circle and in the Municipal Area, and tolerably good work by those in the rest of the circles; but in comparison with the work of the preceding year, increased energy was displayed by the operators in only the Sonthal Pergunnahs and Darjiling Circles, as opposed to a decline of work in the remaining circles, notably in the Eastern Bengal Circle and the Suburbs of Calcutta.

Average number of Operations performed by each Vaccinator.

CIRCLES.	Average number of vaccinators.		Number of operations per man.	
	1885-86.	1884-85.	1885-86.	1884-85.
Calcutta	19	19	651	839
Metropolitan Circles	381	343	980	1,070
Suburbs of Calcutta, including Central Vaccine Depot and Cooly Depôt	15	15	936	1,319
TOTAL OF METROPOLITAN CIRCLES ...	396	358	978	1,078
Darjiling Circle	190	180	1,329	1,275
Ranchi "	187	201	676	741
Sonthal Pergunnahs "	123	142	931	859
Eastern Bengal "	359	329	797	1,206
Orissa "	42	30	1,373	1,565
Behar "	147	140	331	391
Total of Vaccination Circles ...	1,463	1,309	878	1,002
Municipalities, Dispensaries, &c.	226	240	375	358
GRAND TOTAL ...	1,689	1,639	811	908

215. An examination of the table given in the margin, which exhibits the work performed by the Licensed and Government Agencies during the year under review, shows a large amount of work in favour of the former, but the number of operators is in excess. The average of operations by each vacci, nator is in favour of the Government men.

Comparative value of work performed by the Licensed and Government Agencies

	Number of Operators.	Total number vaccinated.	Total number of Primary Vaccinations.	Total number of successful Primary Vaccinations.	Total number of successful Infant Vaccinations.	Total number of Children successfully vaccinated.	Total number of successful Adult vaccinations.	Average operation by each Vaccinator.	Proportion of Population protected per 1,000.
Licensed Agency	1,157	1,004,753	1,004,508	1,000,987	161,395	702,793	136,799	868	20·30
Government Agency ...	306	279,421	274,460	267,192	38,020	188,336	40,827	913	5·46

216. The marginal table furnishes this information. Analysed, it demonstrates that on the whole in both the Vaccination Circles and the Municipal Area children of one year and under six years of age were, as usual, best protected, infants next, and adults least; but that in the Vaccination Circles individually considered there were great variations, for while the abovementioned features were presented by Calcutta and its Suburbs and the Darjiling, Ranchi, and Sonthal Pergunnahs Circles, infants were least protected in the Metropolitan, and most so in the Vaccine Depôt, where also the children and adults were vaccinated at equal rates; and adults were better protected than infants in the Eastern Bengal, Orissa and Behar Circles. Compared with the figures of the preceding year (*vide* paragraph 222 of the Report for 1884-85), it will be seen that a larger proportion of infants and children were vaccinated this year against a smaller proportion of adults.

Vaccinations according to Age.

CIRCLES.	AGES OF THE SUCCESSFULLY VACCINATED, 1885-86.			PROPORTION PER CENT. TO TOTAL PRIMARILY VACCINATED IN 1885-86, EXCLUDING THE UNKNOWN.		
	Under one year.	One year and under six years.	Above six years.	Under one year.	One year and under six years.	Above six years.
Calcutta	4,713	4,781	682	44·63	45·27	6·45
Metropolitan Circles	43,857	258,916	69,551	11·75	69·42	18·64
Bovine Vaccination Depôt, Suburbs	52	13	13	63·41	15·85	15·85
Suburbs of Calcutta	2,710	6,025	932	27·83	60·76	9·39
TOTAL OF METROPOLITAN CIRCLES.	46,619	264,954	70,406	12·17	69·19	18·40
Darjiling Circle ...	53,363	176,728	15,430	23·26	70·45	6·15
Ranchi " ...	31,913	82,371	10,560	25·48	65·77	8·42
Sonthal Pergunnahs " ...	15,074	89,394	9,787	13·16	78·07	8·50
Eastern Bengal " ...	33,734	192,266	59,143	11·80	67·30	20·70
Orissa " ...	5,246	42,729	6,811	9·12	74·32	11·84
Behar " ...	3,762	37,906	4,778	8·03	80·93	10·20
Total of Vaccination Circles ...	199,424	891,129	177,626	15·65	69·94	13·94
Municipalities, Dispensaries, &c.	14,299	50,983	11,796	17·53	62·51	14·46
GRAND TOTAL ...	213,723	942,112	189,422	15·76	69·49	13·97

Vaccination according to Sex.

217. From column 6 of Statement No. 1, Appendix V to this Report, it will be seen that 666,637 males and 617,537 females were vaccinated, which, added to 48,083 males and 36,739 females in the Municipal Area, makes an aggregate of 714,720 males and 654,276 females were vaccinated this year. It will also be found that calculated in the total number vaccinated, the proportion of males operated on exceeds that of females in every Vaccination Circle as well as in the Municipal Area; the aggregate percentages being 51·91 males against 48·08 females in the Vaccination Circles, 56·68 against 43·31 in the Municipal Area, and 52·20 against 47·79 in both areas combined. Following the same process in relation to Populations, it appears that males were protected in larger proportion than females in every circle excepting Calcutta and its Suburbs, and that on the whole 2·75 per cent. of the male population and 2·51 per cent. of the female received protection; the protection in the Vaccination Circles being represented by 2·71 males and 2·49 females, and in the Municipal Area by 3·62 males and 2·92 females.

Vaccination according to Class or Religion.

	Vaccination Circles.	Municipal Area.	TOTAL.
Christians ...	3,188	1,041	4,229
Hindus ...	756,195	60,480	816,675
Mahomedans ...	493,495	22,054	515,549
Other Races ...	31,296	1,247	32,543

218. Columns 20 to 23 of the Statement cited in the immediately preceding paragraph show that the numbers vaccinated according to Class or Religion stood as exhibited in the margin. These figures indicate that with reference to the gross numbers vaccinated, the largest proportions of the operations were, on the whole, performed on the Hindus, next on Mahomedans, third on those returned under the head of Other Races, and least on Christians; the percentages being 59·65, 37·65, 2·37 and ·30, respectively; and that relatively to Populations protected the greatest protection was afforded to Christians (3·61 per cent.), next to Mahomedans (2·74 per cent.), then to Hindus (2·60 per cent.), and least to the Other Races (2·09 per cent). The circles individually considered in the latter respect show that the Christians were better protected in the Calcutta, Metropolitan, Eastern Bengal and Orissa Circles than in the other circles, the Hindus in the Suburbs of Calcutta, and in the Ranchi Circle, and those designated "Other Races" in the Darjiling, Sonthal Pergunnahs and Behar Circles. The Mahomedans did not take precedence in any circle and no Christians were vaccinated in Behar. The Superintendent of the Ranchi Circle says that the classification of operations in his circle, as far as concerns the heading Hindus, is incorrect and misleading, as the great bulk of those who are styled Hindus in Lohardugga, Palamow, Singbhum and the Native States are not only not Hindus, but are not even of the Aryan race, but belong to Aboriginal and Semi-aboriginal tribes, chief among whom in point of numbers are the Urāons, Mūndas and Hos.

Protection afforded to the number Born during the year.

CIRCLES.	Estimated births at 30 per 1,000 of population.	PROPORTION PER CENT. ON NUMBER BORN.		
		Of infants protected.	Of infants who died.	Of infants who remained unprotected at the close of the year.
Calcutta ...	12,996	36·26	19·96	43·76
Metropolitan Circle ...	412,952	10·62	8·52	80·85
Suburbs of Calcutta ...	7,543	36·61	24·12	39·25
Total of Metropolitan Circles ...	420,495	11·08	8·80	80·10
Darjiling Circle ...	264,328	22·07	7·41	70·50
Ranchi " ...	118,141	27·01	6·33	66·64
Sonthal Pergunnahs Circle ...	160,482	9·39	11·83	78·77
Eastern Bengal " ...	341,394	9·88	8·18	81·93
Orissa Circle ...	60,067	8·73	12·15	79·10
Behar " ...	101,096	3·72	17·14	79·13
Total of Vaccination Circles ...	1,478,999	13·48	9·34	77·16
Municipalities, Dispensaries, &c. ...	77,479	18·40	12·09	69·43
GRAND TOTAL ...	1,556,478	13·73	9·48	76·78

219. The marginal table supplies this information. It indicates that, on the whole, only 13·73 per cent. of the infants born, estimated at 1,556,478, were protected during the year, and that eliminating this proportion and that of the infants who died (9·48), there remained at the close of the year the large ratio of 76·78 of unprotected children; and that in no circle was the total number of children born wholly protected, but that the Suburbs of Calcutta, Calcutta, and the Ranchi and Darjiling Circles did the best in this direction in the order named. Contrasted with the results of 1884-85 (*vide* paragraph 225 of the Report of that year), only the Suburbs of Calcutta and the Metropolitan, Darjiling and Orissa

Circles exhibit improvement, the largest reduction having been effected in the Ranchi Circle.

220. This information is given in the table in the margin. It shows that 4,135 villages were visited for the purpose of inspecting vaccinations by the Superintendents, 4,110 by the Deputy Superintendents, and 32,223 by the other subordinate vaccinating staff; that the percentages of the total number of vaccinations examined by these three classes of officers were respectively 9·37, 13·74 and 58·54; and that the proportions per cent. of successful vaccinations ascertained by the same officers were respectively 96·49, 97·09 and 98·03. In comparison with the work of the preceding year (*vide* paragraph 226 of my Report for that year) there was a decrease in the work of the Superintendents under all the three above-mentioned heads, an increase of villages visited and of percentages of inspections of vaccinations against a decrease in the percentage of successful cases observed in the work of the Deputy Superintendents, and an increase of the work of the other subordinate vaccinating staff under all the heads.

Degree of Supervision exercised by the Inspecting Staff over the work of the Vaccinators.

1	2			3			4			5		
Circles.	Number of inspecting officers.			Number of villages visited by—			Proportion per cent. of successful cases observed by—			Proportion per cent. of inspections to total number vaccinated.		
	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.	Superintendents.	Deputy Superintendents.	Superintending Vaccinators.
Calcutta	1	2	..	...	...	...	98·29	97·01	...	3·32	73·67	...
Suburbs of Calcutta	} 1	{ 1	..	All the thanahs.			100·	98·90	..	5·07	41·02	...
Metropolitan Circle . ..		4	39	435	2,169	16,252	99·37	98·03	99·82	4·33	29·35	83·58
Darjiling ,, ...	1	2	12	431	903	4,154	82·30	92·99	94·96	3·76	9·53	48·08
Ranchi ,, ...	1	1	12	562	518	8,501	94·92	99·16	94·47	11·54	9·59	55·73
Sonthal Pergunnahs Circle .	1	...	11	943	...	4,198	99·66	...	99·70	19·38	...	73·96
Eastern Bengal ,, ...	1	1	12	67	520	1,522	97·99	94·81	97·59	1·92	5·53	36·33
Orissa Circle	1	...	5	1,247	...	967	97·14	...	97·71	71·37	...	51·35
Behar ,, ...	1	...	8	450	...	1,629	96·69	...	97·28	21·38	...	62·81
Total ...	8	11	99	4,135	4,110	32,223	96·49	97·09	98·03	9·37	13·74	58·54

A review of the work of the subordinate vaccinating staff shows that several of them performed meritorious and many unsatisfactory work; but as there are over a 100 of such officers, it would be simply carrying this Report to an undue length to note the merits of their individual work.

I should mention that I visited during my inspection tours all the Vaccination Circles, excepting Sonthal Pergunnahs, and communicated with their Superintendents on matters relating to vaccination and sanitary questions. I have also strictly scrutinized the monthly diaries of all officers who submit these commending good and condemning bad work. My impression leads me to believe that, some individual cases excepted, good work has, on the whole, been performed during the year.

221. *Expenditure incurred for vaccination, and average cost of each successful operation.*

Circles.	Total cost in 1885-86.			Average cost of each successful case.					
				1885-86.			1884-85.		
	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.	Government agency.	Licensed agency.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Calcutta	8,842 11 4	......	8,842 11 4	0 13 8	......	0 13 8	0 8 1	......	0 8 1
Metropolitan Circles ...	......	38,335 14 1	38,335 14 1	......	0 1 8	0 1 8	......	0 1 8	0 1 8
Bovine Vaccination Department, Suburbs.	3,734 1 7	......	3,734 1 7	} 0 12 2	......	0 12 2	0 10 8	......	0 10 8
Suburbs of Calcutta ...	5,041 14 7	......	5,041 14 7						
Total of Metropolitan Circles.	8,776 0 2	38,335 14 1	47,111 14 3	0 12 2	0 1 8	0 2 0	0 10 8	0 1 8	0 2 0
Darjiling Circle	1,157 8 3	34,304 9 11	35,462 2 2	0 1 10	0 2 3	0 2 3	0 1 11	0 1 9	0 1 10
Ranchi Circle	11,715 0 0	2,361 0 0	14,076 0 0	0 6 5	0 0 5	0 1 10	0 5 3	0 0 4	0 1 5
Sonthal Pergunnahs Circle...	11,817 4 8	1,052 10 8	12,869 15 4	0 3 4	0 0 4	0 1 10	0 3 6	0 0 4	0 1 9
Eastern Bengal Circle ...	17,544 0 6	1,403 12 0	18,947 12 6	0 3 9	0 0 1	0 1 1	0 1 5	0 0 1	0 0 9
Orissa Circle	6,789 7 8	309 0 0	7,098 7 8	0 2 1	0 1 9	0 2 1	0 2 2	......	0 2 2
Behar Circle	10,067 8 3	1,081 0 0	11,148 8 3	0 6 6	0 0 10	0 3 10	0 4 0	0 0 7	0 2 11
Total of Vaccination Circles.	76,709 8 10	78,847 14 8	1,55,557 7 6	0 4 7	0 1 8	0 2 0	0 2 10	0 1 1	0 1 8
Municipalities, Dispensaries, &c.	......	......	11,154 1 3	......	......	0 2 3	......	......	0 2 2
Grand total ...	76,709 8 10	78,847 14 8	1,66,711 8 9	0 4 7	0 1 3	0 2 0	0 2 10	0 1 1	0 1 8

From the above table it will be seen that the total cost of vaccination during the year amounted to Rs. 1,66,711-8-9, which was borne by the Government agency to the extent of Rs. 76,709-8-10, by the Licensed agency to the extent of Rs. 78,847-14-8, and by the Municipalities to the extent of Rs. 11,154-1-3; that the cost of each successful vaccination conducted by the three agencies in question was annas 4 and 7 pie, anna 1 and 3 pie, and annas 2 and 3 pie, respectively, and that, on the whole, it amounted to 2 annas per case; that, compared with the cost of the preceding year, all the three groups of areas exhibit increase both in gross cost and average cost per case, the excess being represented by the figures given in the margin. Taking the circles individually, there was excess of cost per case, to a more or less extent, in all, excepting the Metropolitan circles, where it was equal.

	Increases in	
	Gross cost.	Average cost per case.
	Rs. A. P.	Rs. A. P.
Government agency ...	3,045 15 10	0 1 9
Licensed " ...	11,764 15 9	0 0 2
Municipalities ...	451 11 7	0 0 1

Contributions to Cost of Vaccination from other sources.

222. In addition to the regular expenditure incurred for vaccinations in the Circles and Municipalities exhibited in the above table, the following contributions were made in aid of the work:—

Rs. 73-2 for two vaccinators for the Barrackpore Cantonment paid from Cantonment Fund. Rs. 30 paid by Northern Bengal State Railway for a vaccinator for vaccinating the children of the Railway employés and others. Rs. 24-5-9 for one vaccinator by Chandpur Tea Estate. Rs. 120 for one vaccinator for the Dinapore Cantonment paid from Cantonment Fund. Rs. 22-8-8 for one vaccinator for Jehanabad dispensary in Gya district, paid from Dispensary Fund. Rs. 48 for one vaccinator for Soorsund dispensary in Mozufferpore, paid from Dispensary Fund. Rs. 30 for one vaccinator for Tajpore dispensary in Durbhanga, paid from Dispensary Fund. Rs. 60 for one vaccinator for Durbhanga dispensary paid by the Maha Rajah of Durbhanga. Rs. 58-1 for one vaccinator for Naraya dispensary in Durbhanga, paid by the Maha Rajah of Durbhanga. Rs. 139-15-8 paid by the Rajah of Hutwa for two vaccinators for Hutwa dispensary, one vaccinator for the Gopalgunge dispensary, and one vaccinator for the Bhori dispensary. One vaccinator worked in the Cuttack Cantonment, but the cost has not been furnished. Two vaccinators were entertained at the Dhenkanal Tributary Mehals, but the cost has not been furnished. Two vaccinators were entertained at Jamalpore, East Indian Railway, but the cost has not been furnished.

Explanations accounting for the increase in the Gross and Average cost of operations.

223. *Calcutta.*—The increase in gross cost is stated to be due (1) to the additional establishment which was entertained for only July and August of 1884-85 having to be maintained throughout the year under review; (2) to the expenses of the calf vaccination having been incurred all the year round instead of four months in the previous year; (3) to the pay and allowances of the Deputy Superintendent hitherto paid by Government having, since the 1st of July 1885, been borne by the Corporation under orders of Government. The increased average cost per each case is due to the increased expenditure above referred to, and to the gross cost having to be distributed over a smaller number of vaccinations performed during the year. *Metropolitan Circles.*—Increase in gross cost is due to Dr. Ghose's pay being less than that of Dr. Gupta in 1884; to the Inspectors having drawn more travelling allowance this year; and to the post of Superintendent having been vacant for nearly three months in 1884. *Ranchi Circle.*—Increase in gross cost is due to the present Superintendent drawing a somewhat higher pay; to the Deputy Superintendent having been granted a higher pay owing to his having been promoted to the 2nd grade of Assistant Surgeons; to the breaking up of a party of 10 vaccinators in the middle of the season 1884-85, which did not occur during this season; to a portion of the contingent expenses undrawn in the preceding year, being debited to this year's account; and to increased travelling allowance incurred.

The increase in average cost per case is due to the gross cost having been spread over a smaller number of operations. *Eastern Bengal Circle.*—Increase in gross cost is due to the appointment of two Inspectors. *Behar Circle.*—The increase in gross cost is referred to the Superintendent having drawn a higher rate of pay during the whole year, and to greater expenditure under the head of travelling allowance, and to Inspectors having drawn pay in 1884-85 only for six months, whilst during this year they drew it throughout the year. Increase of cost per case is due to increase of expenditure and to decrease in the number of operations. I think however, the the large decrease in the number of vaccinators must be the chief factor in increase of cost. *Orissa Circle.*—The cause of increase in total cost was increase of establishment, viz. two Inspectors for licensed system of vaccination, one mehter for office, and 12 apprentices' subsistence allowance during the time they were in training to practice as Licensed vaccinators.

Particulars regarding Licensed agency.

224. The licensed vaccination system was newly extended to thanas Jajpur and Dhurmasala in Cuttack, and it was more extensively carried on in the Eastern Bengal and Behar Circles. The scheme is now in operation in every circle—in the whole of the Metropolitan Circles and in parts of the others. The Officiating Superintendent of the *Metropolitan Circle* notes that the Licensed agency scheme works better and tends to promote vaccination more than the Government agency scheme, the reason being that each vaccinator is anxious to earn as much money as he can, and therefore uses every means in his power to obtain the largest possible number of childern to vaccinate, and he is of opinion that those men who have served as apprentices and have not been inoculators make the best vaccinators. In the *Ranchi Circle*, in order to obviate as far as possible the great difficulty hitherto experienced in rendering the Licensed vaccinators amenable to discipline, it was determined to take securities from them before granting them licenses to practise during the season under report. Twenty-one men in Lohardugga complied with this demand, and a deposit of Rs. 10 was taken from each of them. In Hazaribagh, however, this security could not be obtained, so the vaccinators were engaged on the usual terms, and here much inconvenience was caused by the vaccinators going away to their homes at the close of the season without having their work inspected. The Civil Surgeon of *Durbhanga* employed experimentally a number of ex-inoculators to vaccinate in different parts of the district; but on my objecting to his action, when I visited the Municipality, on the ground that experience showed that without proper supervision these men very often practised inoculation under cover of their licenses, he withdrew their licenses. They had, however, been employed for two months, and no instance of their having practised inoculation was known. Mr. Sharp, the Magistrate of *Maldah*, reported some irregularities on the part of the Licensed vaccinators of his district, which more stringent supervision would have tended to check.

With regard to training men as vaccinators, it is the practice in the *Darjiling* Circle to place under each Licensed vaccinator one or more apprentices to be trained on the theory and practice of vaccination. The Inspectors select the men and the Deputy Superintendent and Superintendent test their competency, before they are appointed as vaccinators. Similarly, Umedwars were attached to each party of vaccinators in the *Ranchi Circle*, and Dr. Owen, before the season's work commenced, delivered several lectures on vaccination to them and made them take notes. The result was, it is said, satisfactory. In the *Sonthal Pergunnahs. Circle* some inoculators were entertained as apprentices, but instead of vaccinating they practised inoculation. The Superintendent of the *Eastern Bengal Circle* reports that inoculators now apply, some to be instructed, others to be examined in vaccination; that no man of this or any other class obtains a license without previous training and examination; that those inoculators who can write enough to enter names in a register have preference given them; that all the Inspectors and head-vaccinators have strict orders to encourage them to learn and practise vaccination; and that "taught and licensed they practise vaccination with fidelity." Twelve men in the *Orissa Circle* and 19 inoculators in the *Behar Circle* were trained as vaccinators during the year. The former were granted licenses to practise.

Great difficulty was experienced in realising fees in some villages in the Birbhum and Murshidabad districts in the *Metropolitan Circles*, in the *Orissa Circle* generally, and in the Patna district in the *Behar Circle*. In the first-named circle the opponents were the Ferazis. In the *Behar Circle* the people of Patna, belonging to the agricultural class, would not think of paying the fees till the paddy crop had been harvested ; but even at other times no amount of persuasion could induce them to pay, and the vaccinators were unwilling to take legal proceedings to recover the fees which are small and distributed, and as great expense would have to be incurred in adopting this course—they were therefore compelled to accept payment by instalments. The Superintendent of this circle observes that unless this evil is checked, good men will not come forward to serve as Licensed vaccinators, for, as it is, the better classes of the Beharis dislike the work.

Attitude of the people towards Vaccination. Opposition offered. Local aid rendered.

Attitude in the Vaccination Circles.

225. In my Report for 1884-85 (*vide* paragraph 248) I mentioned in full detail the classes of the population who persistently opposed vaccination in each Vaccination Circle and in several Municipalities, and the causes which induced them to do so. As the local reports of the year under review furnish much the same information, I need not burden my Report by a recapitulation of it. I will therefore confine myself here to reporting the improvement that has taken place in the attitude and feeling of the people towards vaccination; to noticing the most marked instances of opposition and hostility to the measure indicating Government interference ; and to bringing forward the names of persons who have accorded valuable assistance in promoting the cause of vaccination, disclosed in the reports of this year.

The Superintendent of the *Metropolitan Circle* reports that in the large majority of the villages inspected by him, no opposition whatever to vaccination was exhibited, but that, on the contrary, the villagers seemed to have absolute faith in the measure ; that the Ferazis in the Bagirhat sub-division, who persistently opposed vaccination for years, have accepted it this year through the exertions of Inspector Hazi Mahomed Jan ; that the prejudice in Jessore is being gradually overcome ; and that very little opposition is offered by the resident population in the Suburbs of Calcutta, who appear to be satisfied with the advantages of vaccination as a preventive of small-pox. In the *Darjiling Circle* vaccination is freely accepted, excepting in thanas English Bazar and Maldah, and in small portions of the Rajshahye, Rungpore and Julpaiguri districts. In the *Ranchi Circle* the resistance in the Kolhan was overcome to a great extent this year by the employment of Government instead of Licensed vaccinators whom the people were too poor to pay owing to successive failures of harvest, and by providing Brahmin operators, as curiously the Hos, the inhabitants of the Kolhan, although non-Aryan and having nothing in common with the Hindus, have come to esteem the Brahmins to a degree little short of veneration. The Superintendent adds that, on the whole, active resistance was exceptional and when offered was generally overcome, and that vaccination is most readily received by the aboriginal and semi-aboriginal tribes and low caste Hindus. In the *Sonthal Pergunnahs Circle* the Sonthals generally appreciate the benefits of vaccination, but a class among them, known as the Kheroar or Sappa, are still hostile to the measure. *Eastern Bengal Circle.*—The Superintendent had no reason to modify the opinion he submitted in his last Report, *vide* page 135 of my Report for 1884-85. In the *Behar Circle* the Mahomedans generally appreciate vaccination and exhibit little opposition, and a change for the better was observed among some of the Brahmins and Rajpoots, who were hitherto strong opponents. It is also satisfactory to learn that the Superintendent received letters from some of the punchayets in four villages in thana Belouti in Shahabad, requesting that their children might be vaccinated and stating that fear had restrained them from vaccinating them when the vaccinator visited their villages. In the *Madhubuni* sub-division in Durbhanga the people are, according to the Magistrate, being gradually reconciled to vaccination. In the *Orissa Circle* the low caste Hindus and Mahomedans and the Native Christians did not raise objection, and it was noticed that the feeling of opposition is less strong in the mofussil than in the towns.

226. In the *Municipal Area* vaccination is favourably received and partial or no opposition offered in the following towns :—Midnapore, Ramjibanpore, Khirpai, Ghattal, Berhampore, Jungipore, Baraset, Hughli, Bankura, Bogra, Sherpur, English Bazar, Dinajpur, Jalpaiguri, Darjiling, Purulia, Ranchi, Dumka, Nasirabâd, Sudharam, Comillah, Faridpore, Backergunge, Sarun, Barrh and Jamalpore. In the last-named town, situated along the East Indian Railway line, the objection has been removed by the Railway authorities insisting on the production of a certificate of vaccination by all employés for themselves, wives, families and servants. In the Madhubuni town in Durbhanga reluctance to vaccination is markedly wearing away. In the Behar town some leading men encourage vaccination and consequently great advance is being made in the progress of the measure. It is a favourable sign that some petitions were received from some of the villages in the Barrisal district against the inoculators, and wishing for vaccination to check the evil effects of their practice. In the Faridpore town a family of up-country Brahmins, who were strenuously opposed to protection of any sort, having had five cases of small-pox with three deaths, have come to their senses, and accepted of vaccination. In the Chaibassa town objections have to a great extent died away since the appointment this year of a paid vaccinator, as the people were averse to the payment of fees. It is gratifying to learn that the upper classes of Hindus in the Northern Bengal State Railway line in Rungpore received vaccination gratefully, believed in, and appreciated the measure, exhibited no caste prejudices as to the description (humanized or bovine) of lymph used, and were willing to be vaccinated with virus taken from the arms of an English child or persons of other castes than their own. In the Khulna town the objections of the Ferazis are giving way. In the Serampore town 18 members of a family who had for years refused vaccination received it this year, and it is noticeable that the one remaining member of this family, who was absent in Calcutta, returned with small-pox. It is satisfactory to find that in the Sarun town the Marwaries who hitherto obstinately refused vaccination received it this year. This result was due to the influence of a few prosecutions under the Compulsory Vaccination Act. In city Murshidabad people are exhibiting signs of increasing appreciation of the value of vaccination as a prophylactic, and that the prejudices of even the bigotted and old Mahomedans are fast giving way.

Attitude in the Municipalities.

227. The following are the most marked instances of opposition offered this year. *Metropolitan Circles.*—In the Putia village in thana Keshubpore in Jessore a sect of Hindus called "Bhowani," consisting of about 50 persons, would on no account whatever accept of vaccination, as their belief is that "whatever God does no one can prevent," and in this belief they never take any medicine when they are sick, but only utter the name of their God. *Darjiling Circle.*—In thana Gomastapore in the Maldah district the Ferazi children are unprotected owing to the determined opposition of their parents, and the zemindar of Kadibary in thana Nawabgunge in Bogra refused to have his family vaccinated. In the *Ranchi Circle* great opposition was offered at Garjusoran in Kharakdiha in Hazaribagh by two brothers, Brahman illakadars, named Munie Ram and Deli Ram. *Eastern Bengal Circle.*—The Magistrate reports that the Ferazis in villages in Chandpur in Tipperah obstinately refused to submit to vaccination, because they said that the fanatic Dudu-Meah had forbidden the practice. It is believed that nothing short of legislative action will overcome their resistance. *Sonthal Pergunnahs Circle.*—The Deputy Commissioner observes that he received complaints during the year that the people in Dumka, particularly the aboriginal races, oppose vaccination because they do not like foreign vaccinators, who consequently are unable to secure confidence and trust. *Behar Circle.*—In the thanas in Shahabad newly taken up this year the people were strongly opposed to vaccination, and went so far as to assault the vaccinators; prominent among the opponents were two zemindars of Khalaspore. They were imprisoned for 15 days each for assaulting the vaccinators. This created a sensation among the people and induced them to yield to vaccination to a certain extent.

Opposition in the Vaccination Circles.

228. In the Rungpore town there is a good deal of opposition to be contended with, especially among the Kayahs or Hindustanis of Mahigunge and the Mahomedans.

Opposition in the Municipalities.

Great opposition to vaccination is displayed in the Colgong town particularly by the Marwaries and Brahmins who cannot be made to submit to the measure unless notice under the compulsory law is served on them. Many grown-up children are consequently still unprotected. In Madaripore and Goalundo the followers of Dudu-Moah are averse to every form of protection, but most strongly to vaccination. The lower classes in the Dinapore town threatened the vaccinator and prevented him from vaccinating their children. In the Mozufferpore and other towns in the Mozufferpore district the Beharis having implicit confidence in inoculation on religious grounds are strongly opposed to vaccination. *Motihari and Bettiah towns.*—The Civil Surgeon says that he has seen persons with young children looking on when he was vaccinating or inspecting vaccinations in the bazar, but who, on being requested to have their children vaccinated, either refused or carried away their children hurriedly. In Dhenkanal in Cuttack a curious belief prevails, viz. that when any member of a family is attacked by small-pox no children of that family should be either inoculated or vaccinated, as to do so would invoke the displeasure of the goddess of small-pox called "Mongolla." In the Cuttack town the Bhujpooriahs depend for protection on the natural disease only, and many parents sometimes go so far as to destroy the vesicles in order to prevent lymph being taken from the arms of their children.

Aid rendered.

229. The following persons, official and non-official, are reported to have rendered valuable assistance in furthering the cause of vaccination. *Government officials who assisted*:—Magistrates of Burdwan and Birbhum; Colonel Lillingstone, Deputy Commissioner of Lohardugga; Colonel Garbett, Deputy Commissioner of Hazaribagh; Mr. Ainslie, Assistant Commissioner of Palamow; Joint-Magistrate of Ranigunge; Baboo Soshi Sidhu Atta, Deputy Magistrate of Perozepore in Backergunge; all civil authorities in Patna; and the Sub-Divisional Officers of Ranaghat and Kushtea in Nuddea, of Govindpur in Manbhum, of Jamui and Beguserai in Monghyr, of Banka and Mudehpur in Bhagulpore, and of Buxar, Sasseram and Bhabuah in Shahabad. *Police*:—Sub-Inspectors of Gangajalghatti in Bankura; Head-Constable Anka Pershad of thana Kharakdiha in Hazaribagh; and all police officers in Patna. The *Municipal Commissioners* of Tipperah, Hughli, Midnapore, Ranaghat, and Ghattal. *Private persons*:—Baboo Suryanath Chowdhury of Ichapore in thana Gaighatta in Jessore, Baboo Bajrung Shahi of Ranchi, the Manager of the Dhenkanal Estate in Cuttack, and the native gentlemen in Kishnaghur in Nuddea who allowed vaccine stations to be located in their private residences.

Extension of the Compulsory Vaccination Act and other particulars relating to the working of this law.

Chattra	Municipality.
Mozufferpore	„
Serajgunge	„
Arrah	„

230. This Act was introduced during the year under review into the places named in the margin. In regard to the working of this law there is great divergence. In several of the Sudder Municipalities its provisions are properly attended to; in some they are not, but in almost all the minor towns they are but partially enforced. The defects are mainly that in many towns vaccine stations have not been opened; that in most of those towns where they have been opened the people are not compelled to resort to them; that the vaccinating staff is incommensurate with the requirements of the town, and is kept on for either three, two, or even one month; that no fee is charged for home vaccination, because the people being unwilling to resort to the vaccine station, the vaccinators are compelled, in order to protect them, to proceed to their houses. I subjoin a few illustrations of the above observations. The irregularities in the mode and plan of operations in the *Suburbs of Calcutta* noticed in my reports for 1884 were completely rectified during the year under review. The Compulsory Vaccination Act was fully enforced; all the depôts were opened for vaccination regularly on certain fixed days; and notices under schedule D of the enactment were issued on 860 persons, of whom 422 were prosecuted and 112 convicted and fined, excluding the acquitted and some who left the jurisdiction on receipt of summonses. The effects of these measures have been that the unvaccinated children were brought in crowds to the depôts; the number of children under one year vaccinated has increased from 1,819 to 2,810, and very few children were left unprotected, so much so that the Officiating Superintendent could not, he says, during his inspections

of the bustees find a single child unvaccinated, excepting a few who were not permanent residents. Another good result is that small-pox was absent from the Municipality during the year, a few sporadic cases of it which occurred in its northern division excepted. For home vaccinations Rs. 72 were realized against Rs. 123-4 in 1884. Taking the number of registered births amounting to 5,853, and deducting from this number the 2,810 children who were vaccinated and 1,092 children of the same age who were reported to have died, 1,951 children are found to be unprotected. Under the statement above made by the Officiating Superintendent it is clear that the parents or guardians of these children must have removed them from jurisdiction on receipt of notices calling upon them to have them vaccinated. It is gratifying to find from the Civil Medical Officer's report that in the towns of *Bankura* and *Bishenpur*, where the Compulsory Vaccination Act has been introduced, it is scarce to meet an unprotected person. This with the fact that the people are apathetic in all matters relating to preventive medicine and fondly attached to traditions, induces him to suggest that that it is of the utmost consequence to introduce the compulsory law into the district, and empower the licensed vaccinators with authority to prosecute recusants. The Magistrate coincides with this view of the matter. *Calcutta.*—The Superintendent says that the feeling of opposition is very great, and it will take years to overcome it. The intelligent and ignorant both avoided coming into the stations during the lymph-taking season, and the latter would not consent to go to a private house even if very liberally paid. It is instanced that a beggar woman who would find it hard to earn two or three annas a day by begging would not consent to take her child to a private house even if offered a rupee. For these reasons the Superintendent urges that the Compulsory Vaccination Act should provide that those who get their children vaccinated at a public vaccine station free of charge must allow at least one child to be vaccinated from lymph taken from their children. *Mozufferpore.*—At the meeting of the Commissioners of the Lalgunge Municipality, held on the 12th May 1885, the most extraordinary views were expressed by the whole body of them, the Chairman and Vice-Chairman dissenting. They said that they viewed the English method of vaccination with the greatest distrust; that they were averse to compulsory vaccination in that way; that while considering that compulsory vaccination was expedient, they thought that the native method of vaccination should not be disallowed; that they found that the introduction of the Act and the appointment of Government vaccinators would be tantamount to making vaccination according to the native method illegal. At the *Hajeepur* Municipality also the introduction of the enactment was considered a novelty and rejected on the ground that the measure was opposed to the feelings of the people. The Superintendent of the *Sonthal Pergunnahs Circle* says that he had no opportunity to test the working of the Compulsory Vaccination Law in the rural tracts of Bhagulpore and Monghyr where it is in operation. This he should have done specially, as it is important to know how the law is applicable to rural areas. In the *Gya* Municipality 1,220 prosecutions were instituted, but the persons were not proceeded against, as some lost their children, many had them vaccinated, and some had removed them, and as the Magistrate considered that this leads to needless harassment of the people who are already very much prejudiced, and that hence the law is rendered very unpopular. He however thinks the first thing necessary is to improve the birth registration with the view of securing identification of parents who have failed to vaccinate their children within the year—and this is now engaging attention.

Although introduced in 1884, the law was not worked in the *Durbhanga* Municipality, and not till after I had visited the Municipality and pointed out the omission, were its requirements attended to. The vaccinators objected strenuously to work under this system, so much so that rather than let the small remainder of the working season pass by without work being done, the Civil Surgeon was obliged to abandon the station system for this season and to revert to the house-to-house system of vaccination to which the vaccinators were wedded. Distinct opposition was offered by the higher castes of the Hindus. This will have to be met under the penal clause of the Act if it is repeated. *Port of Calcutta.*—In the absence of small-pox no notices under the Compulsory

Vacination Act were issued by the Health Officer. As usual, some of the crews of Maldive boats voluntarily had themselves vaccinated at the vaccine depôts. A case of small-pox having occurred on board a vessel, the vaccination department, at the request of the Health Officer, sent a calf on board and vaccinated all unprotected persons. It is gratifying to learn from Dr. Lynch's report that numbers, who were formerly prejudiced against vaccination with humanized lymph, are now readily and promptly taking to vaccination with bovine lymph.

SECTION VIII.

SANITARY WORKS (MILITARY).

231. The information under this head is not required from the Sanitary Commissioner for Bengal.

SECTION IX.

SANITARY WORKS (CIVIL).

Total Income of Municipalities and Objects of Expenditure.

232. The incomes of the Municipalities in each district and the purposes for which they were used are exhibited in the subjoined table—

Districts.	Number of Municipalities and Unions.	Income in 1885, including balance from the last year.	Percentages of Income expended on— Sanitary Works. 1885.	1884.	Roads.	Sanitary Works, including Roads.	Police.	Other requirements.
		Rs. A. P.						
Burdwan	5	1,32,743 0 0	53·49	51·50	11·56	65·05	...	20·27
Bankura	2	19,586 0 0	27·88	25·15	5·65	33·53	...	20·87
Birbhum	1	7,357 10 10	54·41	43·91	4·96	59·40	...	4·11
Midnapore	6	61,869 10 9	51·26	50·58	14·82	66 08	...	16·86
Hughli, including Serampore ...	7	1,62,447 6 3	33·00	34·04	22·31	55·31	...	25·21
Howrah	2	2,60,536 10 2	37·62	37·40	20·06	57·68	4·14	23·13
24-Pergunnahs ...	16	6,09,601 0 0	38·87	29·09	18·30	57·28	5·45	18·03
Nuddea	8	82,996 0 0	28·61	27·66	25·74	54·35	...	16·60
Jessore	3	22,268 14 10	52·09	45·19	18·95	71·04	...	9·07
Murshidabad ...	4	1,01,980 15 11	43·62	36·15	13·37	56·90	...	10·50
Khulna	4	15,979 9 2	25·87	17·44	15·68	41 56	...	15·93
Dinajpur	1	27,432 11 0	44·58	35·83	17·94	62·55	...	5·87
Rajshahye	2	86,346 0 0	32·72	30·19	15·25	47·98	...	19·79
Rungpore	1	14,108 7 6	37·50	41·71	4·34	41·84	...	8·89
Bogra	2	14,537 0 0	25·39	21·03	24·53	49 92	...	19·23
Pubna	2	27,442 14 4	32·27	30·87	20·26	52·53	...	24·84
Darjiling	2	1,22,861 6 4	51·96	42·31	9·94	61·91	·01	8·92
Julpaiguri	1	4,909 8 2	30·40	63·35	...	30·40	...	29·87
Dacca	2	1,98,418 4 10	62·62	58·47	13·34	75·97	...	5·15
Faridpore	3	22,674 2 0	42·39	25·88	9·28	51·67	...	23·35
Backergunge ...	4	25,377 10 0	47·59	25·86	16·13	63·72	...	10·10
Mymensing ...	6	53,163 4 9	23·56	13·67	18·68	42·25	...	24·09
Chittagong ..	2	36,480 0 0	29·08	28·95	15·18	43·27	...	40·22
Noakhali	1	10,395 0 7	23·37	23·27	4·06	27·44	...	1·83
Tipperah ...	2	29,427 0 0	31·65	38·98	17·16	48·81	...	23·2
Patna	3	1,39,609 10 5	47·96	46·26	16·41	64·38	...	16·1
Gya	1	90,298 6 10	47·23	37·61	10·92	58·16	...	23·6
Shahabad ...	6	53,350 0 0	43·17	48·13	19·72	62·90	...	15·9
Mozufferpore ...	5	60,552 0 10	23·12	26·55	20·98	44·10	...	38·3
Durbhanga ...	3	44,915 0 0	38·26	31·03	17·42	55·68	...	15·7
Sarun	3	61,780 10 1	40·81	34·24	6·60	47·42	·03	23·6
Chumparun ...	2	23,211 6 2	46·71	43·48	20·98	67·69	...	17·7
Monghyr ...	2	1,24,658 0 0	18·67	44·89	9·76	28·44	...	61·7
Bhagulpore ...	2	62,151 4 4	38·29	40·25	26·19	64·49	...	15·6
Purneah... ...	2	28,778 15 7	19·63	27·97	35·34	54·98	...	24·5
Maldah	2	12,335 8 0	37·11	40·49	13·61	50·72	...	21·7
Sonthal Pergunnahs	2	14,279 0 0	46·02	45·31	10·68	56·69	...	9·
Cuttack	3	45,243 11 6	34·45	34·30	15·29	49·75	...	20·3
Puri	2	31,965 0 0	38·05	51·39	10·13	49·09	...	19 4
Balasore... ...	1	11,418 7 3	32·79	36·21	31·73	64·52	..	7·6
Hazaribagh ...	2	14,589 8 4	56·19	52·17	7·62	63·82	·09	9·3
Lohardugga ...	1	12,479 6 5	41·66	38·36	21·88	63·54	...	18·1
Singbhum ...	1	5,552 4 1	16·06	36·50	·95	17·02	...	6·6
Manbhum ...	1	13,121 2 5	59·49	29·52	11·40	70·90	...	6·6
Grand Total ...	133	30,41,223 9 8	40·28	37·60	16·59	56·88	1·61	19·9

The accounts of a few Towns or Unions which were converted into Municipalities during the latter part of the year have no place in the above table owing to the assessments of their municipal incomes not having been completed. From the above table it will be seen that the total income of the Municipalities during the year amounted to Rs. 30,41,223; that, contrasted with the income of the preceding year, there was a diminution of Rs. 237,103; and that of this income 40 per cent. against 38 per cent. was expended on Sanitary Works (original and recurring); 17 against 19 per cent. on Roads; 2 per cent. against the same proportion on Police; and 20 against 16 per cent. on other requirements, denoting that, notwithstanding a reduction of income, the apportionment for maintaining the sanitary status of the towns had exceeded that of the preceding year. Nevertheless, the towns, individually considered, did not exhibit similar activity in this important direction. Thirty-five out of 133 of them, viz., those named in the subjoined table, expended appreciable proportions of their resources in improving their condition; while 15, also cited below, allotted very insignificant proportions for

the like purpose. In the remaining towns (83) the percentages of income diverted towards sanitary improvements ranged from 16·10 to 39·86:—

Towns which returned appreciable results.	Percentage of Income.		Percentage of Income.	*Towns which returned insignificant sreutls.*	Percentage of Income.
Hazaribagh ...	68·76	Kishnaghur ...	47·07	Joynaggar ...	3·19
Dacca ...	67·96	Kandi ...	46·54	North Dum-Dum	4·51
Midnapore ...	66·94	Deoghur ...	46·22	South Dum-Dum	5·47
Jessore ...	65·28	Shahebgunge ...	45·85	Muktagachi ...	6·59
Burdwan ...	60·11	Suburbs of Calcutta ...	45·22	Nuddea ...	7·78
Purulia ...	59·49	Cutwa ...	44·95	Debhatta ...	9·23
Arrah ...	58·53	Chupra ...	44·80	Jhalakati ...	10·85
Barisal ...	58·30	Dinajpur ...	44·60	Nalchitti ...	11·24
Faridpore ...	55·11	Motihari ...	44·00	Sitamurhi ...	11·70
Suri ..	54·41	Behar ...	42·44	Comercalli ...	12·09
Darjiling ...	53·86	Old Maldah ..	42·43	Bansberia ...	13·55
Puri ...	52·27	City Murshidabad ...	42·30	South Barrackpore	14·03
Madhubani ...	51·23	Tumluk ...	42·20	Sherpore ...	14·46
Patna ...	51·07	Ranchi ...	41·66	Lalganj ...	14·56
Jugdispore ...	51·04	Bhudderessur ...	41·36	Monghyr ...	15·83
Bettiah ...	49·72	Beauleah ...	40·38		
Bazitpore ...	48·14				
Berhampore ...	47·27				
Gya ...	47·23				

It is much to be regretted that such important towns as North and South Dum-Dum, Nuddea, Barrackpore, Sherpore and Monghyr should appear in the inappreciable list.

Details of Expenditure on Sanitation.

233. The marginal table shows the special purposes for which the amount assigned for the Sanitation of towns (Rs. 12,25,264 against Rs. 12,32,789 in 1884, exclusive of Rs. 5,04,811, the cost of constructing and maintaining roads) was expended, and the amount which was devoted to each of such purposes. In comparison with the expenditure of the preceding year, the principal increase is seen under the heads of Water-supply and Treatment of the sick, and the chief decrease under the head of Drainage. The increment under the head of Water-supply is traceable to Darjiling and some of the towns in the 24-Pergunnahs having spent much larger sums, the gross expenditure in these towns under this head amounting to Rs. 14,329 against Rs. 3,737 in Darjiling, and Rs. 63,156 against 1,662 in the towns in the 24-Pergunnahs; and under the head of Treatment of the sick to most of the towns having allotted larger sums for this purpose, particularly some of those which were influenced by the inundations, or to which sufferers from this cause were driven, Midnapore having alone expended Rs. 10,225. On the other hand, the decrease under the head of Drainage is attributable to Gya, Patna and some of the towns in the 24-Pergunnahs having expended considerably lesser amounts, viz., Gya Rs. 872 against Rs. 10,579; Patna, Rs. 2,191 against Rs. 25,782; and the towns in the 24-Pergunnahs Rs. 9,158 against Rs. 13,032. It should, however, be mentioned that it does not appear that any portion of the expenditure above detailed has any connection with *original* Sanitary Works, excepting some portion of that incurred under the head of Water-supply in the Darjiling town.

	Total cost.		Difference in 1885.	
	In 1885. Rs.	In 1884. Rs.	Increase. Rs.	Decrease. Rs.
On Conservancy, including Latrines	3,80,714	3,99,293	..	18,579
„ Conservancy Establishment ...	2,91,828	2,82,206	9,622	....
„ Drainage	52,363	1,05,973	......	53,610
„ Water-supply	1,57,366	1,35,181	22,185	... ..
„ Disposal of the Dead	7,544	8,341	... ..	797
„ Markets and slaughter-houses ...	24,451	24,042	409	......
„ Vaccination	15,417	12,481	2,936	......
„ Treatment of the Sick	2,08,078	1,87,185	20,893	......
„ Other Sanitary Works	87,503	78,087	9,416	... ..
Total ...	12,25,264	12,32,789	.....	7,525
On construction, maintenance and repair of Roads	5,04,811	6,28,578	......	1,23,767
Total, including Roads ...	17,30,075	18,61,367	......	1,31,292

General progress in Sanitation in the Towns and Districts.

234. The above table gives the gross expenditure incurred for sanitary purposes, including recurring charges incidental to every year; but the amounts expended from municipal funds for carrying out *original* Sanitary Works during the year, which directly indicate the actual progress made in sanitation in the towns, are exhibited in abstract, under the several heads for which they were incurred, in the following table. Details of these works will be found summarised in Appendix IV to this Report, which also contains a description of the *original* Sanitary Works which were executed in the *districts* at other than municipal cost. It will also be observed that several of the

Sanitary Works were undertaken as relief measures to ameliorate the distress entailed on the people from failure of food-supplies caused by drought, excessive rain, inundations, the cyclone, &c. I should also state that the cost of many works undertaken during the year have not been furnished, and that in order to avoid prolixity many works of minor utility, such as those relating to medical relief, acquisition of land, extensions of drains or roads, &c., which, however, in the aggregate have conduced to advance sanitation, have been omitted from the above-mentioned Appendix and subjoined table :—

DISTRICTS.	MUNICIPALITIES.	TOTAL INCOME.	Total Expenditure on *Original Sanitary Works*.	Percentage of Income expended on *Original Sanitary Works*.	AMOUNT EXPENDED FOR *Original Sanitary Works* UNDER THE FOLLOWING HEADS— Drainage.	Water-supply.	Conservancy.	Disposal of the Dead.	Markets and Slaughter-houses.	Roads.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Burdwan	Burdwan	1,04,350	39,985	38·31	......	39,985	......	......	......	......
	Cutwa	5,192	433	8·33	68	......	......	......	......	365
	Culna	7,692	211	2·74	......	......	......	......	......	211
Bankura	Bankura	10,063	673	6·68	673	......	......	......	......	......
	Bishenpore	9,523	489	5·13	......	......	......	......	......	489
Birbhum	Suri	7,358	276	3·75	231	......	45	......	......	......
Midnapore	Midnapore	34,513	1,641	4·75	1,084	......	......	......	......	557
	Tumlook	8,503	1,572	18·48	......	......	......	......	1,572	......
	Ghatal	6,694	100	1·49	......	......	100	......	......	......
	Khirpai	3,060	352	11·46	......	200	......	......	......	152
Hughli	Hughli and Chinsurah	62,898	10,501	16·69	......	......	......	......	......	10,501
	Serampore	54,886	2,195	3·99	......	......	25	......	......	2,170
	Uterpara	10,910	873	8·00	......	......	......	......	......	873
	Baidyabatti	18,294	2,216	12·11	......	......	......	......	......	2,216
	Bhudressur	8,077	1,127	13·95	......	......	226	......	......	901
	Kotrung	3,333	438	13·14	......	......	......	......	......	438
Howrah	Balli	10,859	1,800	16·57	......	......	......	......	......	1,800
24-Pergunnahs	Suburbs of Calcutta	5,31,442	4,182	·78	......	......	124	......	......	4,058
	South Suburban	25,865	2,022	7·81	......	......	......	......	......	2,022
	Baranagore	22,160	1,357	6·12	......	......	......	......	......	1,357
	Rajpore	8,688	1,377	15·84	......	......	......	......	......	1,377
	Barriepore	4,853	256	5·27	74	75	......	......	......	107
	Joynagore	6,221	347	5·57	......	......	......	......	......	347
	South Dum-Dum	14,239	2,466	17·31	......	......	......	......	......	2,466
	Barasat	18,897	4,374	23·15	500	......	......	......	......	3,874
	Naihatti	13,027	909	6·97	207	......	......	40	......	662
	Bussirhat	6,557	250	3·81	250	......	......	......	......	......
Nuddea	Kishnaghur	24,444	1,235	5·05	......	1,235	......	......	......	......
	Nuddea	5,841	1,439	24·63	......	......	......	......	......	1,439
	Ranaghat	5,862	597	10·18	......	......	......	......	......	597
	Santipore	26,898	5,270	19·59	600	2,020	......	......	......	2,650
Jessore	Jessore	13,967	2,170	15·53	41	1,656	194	......	......	279
	Mohespore	3,126	2,021	64·65	1,064	......	......	......	......	957
	Kotechandpore	5,176	541	10·45	433	......	......	......	......	108
Khulna	Khulna	4,044	162	4·00	......	......	......	50	......	112
	Satkhira	7,095	463	6·52	......	463	......	......	......	......
Murshidabad	Berhampore	32,747	306	·93	306	......	......	......	......	......
	City Murshidabad	52,896	689	1·30	......	......	689	......	......	......
	Kandi	7,023	81	1·15	81	......	......	......	......	......
	Jungipore	9,315	445	4·77	......	......	......	......	......	445
Dinajpur	Dinajpur	27,433	4,114	14·99	......	......	160	......	......	3,954
Rajshahye	Beauleah	23,043	75	·32	......	......	75	......	......	......
	Nattore	13,302	671	5·04	671	......	......	......	......	......
Bogra	Bogra	10,707	1,790	16·71	......	......	120	......	......	1,670
Pubna	Pubna	15,061	1,837	12·19	188	205	126	380	......	938
	Serajganj	12,382	1,976	15·95	......	730	......	263	......	983
Darjiling	Darjiling	1,11,632	9,854	8·82	3,729	922	2,489	......	2,714	......
	Kurseong	11,220	1,165	10·37	......	972	193	......	......	......
Dacca	Dacca	1,60,518	12,965	8·08	330	502	7,111	......	......	5,042
	Naraingunj	37,900	5,866	15·47	38	......	1,647	748	......	3,382
Faridpore	Faridpore	10,630	535	5·63	67	498	......	......	......	......
	Madaripore	7,391	400	5·41	......	400	......	......	......	......
	Goalundo	5,272	445	8·43	......	397	48	......	......	......
Backergunge	Barisal	18,140	731	4·02	100	......	140	......	......	491
	Nalchitti	4,286	125	2·91	......	125	......	......	......	......
	Perozpore	1,413	138	9·76	35	103	......	......	......	......
Mymensing	Nasirabad	27,062	663	2·44	......	......	363	300	......	......
	Muktagachi	5,916	1,265	21·38	......	926	18	......	......	321
	Sherpore	6,566	100	1·52	......	......	......	......	......	100
	Bazitpore	1,990	328	16·49	97	231	......	......	......	......
Noakhali	Sudharam	10,395	377	3·62	......	85	292	......	......	......
Tipperah	Brahmanberiah	8,226	24	·29	24	......	......	......	......	......
Patna	Patna	1,11,247	4,880	4·39	......	......	......	......	......	4,880
	Behar	16,933	809	4·77	318	416	75	......	......	......
	Barh	11,430	132	2·15	132	......	......	......	......	......
Gya	Gya	90,288	199	·21	199	......	......	......	......	......

Districts.	Municipalities.	Total Income.	Total Expenditure on Original Sanitary Works.	Percentage of Income expended on Original Sanitary Works.	Amount expended for *Original Sanitary Works* under the following heads—					
					Drainage.	Water-supply.	Conservancy.	Disposal of the Dead.	Markets and Slaughter-houses.	Roads.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Shahabad	Jugdispore	2,019	100	4·87	26	74	......	......	......	......
	Dumraon	5,785	440	7·51	374	......	66	......	......	......
Mozufferpore	Mozufferpore	44,400	2,292	5·16	......	......	......	......	......	2,292
	Hajipore...	5,645	634	11·23	......	......	......	......	......	634
	Lalganj	3,248	820	25·52	......	......	......	......	......	820
Durbhanga	Durbhanga	28,878	1,273	4·40	173	......	......	......	......	1,100
	Madhubani	9,859	91	·92	......	......	......	......	......	91
	Roserah	6,177	1,181	19·11	170	......	......	......	......	1,011
Sarun	Chupra	43,188	1,178	2·73	......	......	921	......	......	237
	Sewan	7,370	563	7·63	......	......	......	......	......	563
Chumparun...	Bettiah	11,034	258	2·33	199	......	59	......	......	....
	Motihari...	12,177	3,534	29·02	......	......	......	......	.	3,534
Monghyr	Monghyr	1,07,010	651	·88	......	338	......	......	......	613
	Jamalpore	16,748	386	2·30	18	148	220	......	......	.....
Bhagulpore	Bhagulpore	57,230	2,090	3·65	27	......	......	......	......	2,063
	Colgong	4,921	55	1·11	......	......	55	......	......	.....
Purneah	Purneah	28,312	278	·08	278	......	......	......	......	..
Maldah	English Bazar...	9,117	919	10·08	389	......	130	......	......	400
	Old Maldah	3,210	382	11·86	258	......	......	......	......	124
Sonthal Pergunnahs ...	Deoghur	6,278	207	4·25	......	207	......	......	......	....
	Shahebganj	8,001	673	8·41	673	......	......	......	......	...
Cuttack	Cuttack	36,594	3,304	9·02	1,189	......	91	......	713	1,311
	Kendrapara	6,625	620	11·02	......	......	......	......	......	620
	Jajpore	3,025	87	2·87	......	......	......	......	......	87
Puri	Puri	17,648	60	·33	......	......	60	......	......	......
Hazaribagh	Hazaribagh	8,372	734	8·76	589	145	......	......	......	....
	Chatra	6,218	515	8·28	......	......	......	......	......	515
Lohardugga	Ranchi	12,479	2,781	22·28	50	......	......	......	......	2,731
Singbhum	Chyebassa	5,552	54	·97	......	......	......	......	......	54
Manbhum	Purulia	13,121	2,346	17·88	529	......	......	......	1,817	..
	Grand Total ...	25,06,495	1,78,230	7·11	16,533	53,118	15,862	1,781	6,816	84,120

From the above table it will be seen that only the towns noted in the margin allotted appreciable proportions of their incomes in carrying out original sanitary improvements, the percentages in the other towns ranging from 19·59 to ·21.

Moheshpore	64·65	Nuddea	24·63
Burdwan	38·31	Baraset ...	23·51
Motihari	29·02	Ranchi	22·28
Lalganj	25·52	Muktagachi	21·38

235. Of the Sanitary Works which were undertaken or were under consideration during the year, those which claim attention as important sanitary measures calculated to confer much benefit are the following:—

Important Sanitary Works which were undertaken.

236. **Water-Supply.**—In *Burdwan* a further sum of Rs. 39,985 was expended in completing the water-works, a description of which was furnished in my Report for 1884. The filtered water continues to confer immense benefit to the towns-people who use it, and it is asserted by the Civil Surgeon that it has diminished sickness and mortality in the town and this opinion, it is said, is shared by the medical practitioners, who represent a respectable number. In the *Faridpore* town several tanks and ghâts were reserved, the former exclusively for drinking, and the latter for bathing purposes, cattle being excluded from them. In the *Midnapore* town many foul tanks were drained and numerous tanks in similar condition were closed during the cholera epidemic. The water-supply question in the *Howrah* town has been long, and is yet under, consideration. The Civil Surgeon says that every Commissioner is anxious for pure water, and will exert himself to get it as soon as he knows—(1) what it will cost to have a sufficiently ample supply; (2) how the money is to be raised for the work; and (3) how the rate is to be levied for it in a town where the rate-payers most highly assessed will be those least able to make use of the supply. He has not seen a practical answer to any of these questions. Preliminary arrangements are being made for an artificial supply

In Towns.

of good drinking water in the portions of *City Murshidabad* at a distance from the river where the want of water is much felt. The question of permitting house connections with the water-pipes is under consideration in the *Darjiling* town, but before this can be done a larger supply is required from the head works. Moreover, many more hydrants are required for the town. I think that the object to be carried out should be an increase of, and not the artificial limit of, the present supply, which is stated to be insufficient. It appears that six additional springs are available, and have been gauged since October once a week. The tapping of additional springs, however, is not all that is necessary. A large main between Senchal and Jore Bungalow, and a larger than the present one between Jore Bungalow and the station, are required. On the 1st May 1886, I found that the water from one spring alone was sufficient to fill the Senchal main, and the other had to be disconnected. With reference to the proposed Gunduck filtered water-supply scheme for the town of *Mozufferpore*, which, as stated in my Report for 1884, was negatived by the Municipal Commissioners on untenable grounds, the Civil Surgeon says that he hopes that the question will be favourably reconsidered and the scheme carried out before some formidable outbreak of disease brings prominently to notice the necessity of the measure. The scheme for connecting the Gunduck river with the Chundrawati, in order to secure good water for the town of *Bettiah* in Chumparun, although feasible, has been suspended for want of funds. Local subscriptions, it is said, are obtainable, but Government aid is needed. The water-works project in the town of *Bhagulpore*, referred to in my Report for 1884, was taken in hand this year and is progressing. A scheme of water-supply for the town of *Cuttack* has been devised by the Superintending Engineer, Mr. Hughes, in connection with river water stored above the weir at Jobra. Two points have to be considered with reference to this scheme—*first*, the initial outlay, and, *second*, the subsequent annual expenditure. The first will, it is believed, be met by local subscriptions and the second by the levy of a water-rate. In the *Puri* town an experimental water-supply scheme is in hand. It aims at providing water from wells and a settling-tank near the Meetiary road. Iron pipes leading to the town will convey the supply for distribution.

In Districts.

237. With regard to the water-supply of the *chief stations* on the *Eastern Bengal State Railway line*, allusion to the bad condition of which was made in paragraph 276 of my Report for 1884, it was reported during this year that, for the purpose of securing good drinking water, a brick well had been sunk at the Kanchrapara station; filters had been provided at all the stations at which drinking water is supplied; a well similar to that at Kanchrapara will be sunk at the Poradha station if good water is obtainable by the Norton's tube test; and the water-supply tanks at Chooadanga and Bogoola will be enlarged and deepened. It was also proposed to excavate a subsidiary tank at Kanchrapara for the workshops. In the *Burdwan* district Government granted Rs. 5,000 for the improvement of the water-supply of the distressed tracts, and Rs. 30,000 were advanced under the Land Improvement Act to landholders and superior tenants for clearing out and deepening old and silted-up tanks and excavating new ones. These improvements will, it is calculated, prove highly beneficial to the people in a sanitary point of view, and supply irrigation to a large area of rice land. *Midnapore.*—Much was done for the improvement of the Khas Mehals or Government Estates. The total expenditure for this purpose amounted to Rs. 20,283. The sanitary works consisted of the construction and excavation of three tanks and two wells, repairing of two bunds, providing a drainage channel in connection with a bund in mouza Arasin, providing grambheris in no less than 64 places and 4 khals. *Nuddea.*—The enquiry into the quality of well-water in the Nuddea district, referred to in paragraph 261 of the Report for 1884, has been continued, and samples of water from the places marginally noted have been analysed. The results obtained are in no instance good; some waters may be described as "usable" for drinking purposes, but that of the Chooadanga lock-up is "suspicious," and the sample from Rajah's chuk in the Municipality of Kishnaghur distinctly impure. Most of these wells are favourably situated,

Sub-divisional compound, Kushtea.
Chooadanga lock-up.
Sub-divisional compound, Meherpore.
Sub-jail ditto ditto.
Rajah's chuk, Kishnaghur.
Ranaghat.

except the last two. The one at Kishnaghur is evidently affected by the neighbouring well-privies, while that at Ranaghat escapes this mode of sub-soil pollution. The enquiry, so far as it goes, is disappointing, as it leads to the belief that water derived from shallow wells in the Nuddea district is not likely to be of the quality which is desirable. It, however, by no means discredits the proposals of Mr. Hughes, when Superintending Engineer of the Circle, to sink wells into the deep water-bearing stratum. Twenty-two tanks were re-excavated in the Ranaghat sub-division, whereby the water for drinking and culinary purposes was materially improved. In the same sub-division the silted-up mouth of the Choorny, at the point where it had originally discharged itself into the Ganges, was opened. By this the Ganges water now enters the Choorny by the action of the tidal current, whereby good water has been secured for the villages skirting its banks.

238. **Drainage.**—*Midnapore.*—Levels were taken for carrying out the longcontemplated *Ghatal* drainage scheme, but the floods of August and September put a stop to all further action in the matter. Much was done for the improvement of the drainage of the *Midnapore* town. The big drains were rendered effective; the central drain was bunded up at Churnimarshi to clear the silt below the bund and to prevent the formation of pools of stagnant water; and new drains were cut in different parts of the town. *Murshidabad*—In *City Murshidabad* the Baluchar ward was surveyed and its levels taken with a view to introduce a regular system of drainage. Arrangements were being made to improve the state of the Bistopore bhil, in the east of the *Berhampore* town, by cutting a channel from the Khagra sluice to the *Natub* so as to flush the bhil with river water and improve the drainage. This, owing to its being a work of magnitude, cannot be carried out for want of funds. Drainage works for the *Beauleah* town were commenced and are being carried out with great activity by the Public Works Department, the expenditure having been met by public subscription. It is expected that drains Nos. I and II—the former situated in the eastern end of the town, and the latter passing through the central portion of it—will be completed before the next rainy season. But more funds are required before a complete system of drains to carry off the river water of the villages and fields in the suburbs of the town can be secured. A proper drainage scheme for the town of *Mozufferpore* has long been under consideration as an important and most pressing want. This year the levels of the drains in the town were taken; the Executive Engineer was requested to recommend a scheme; and provision was made in the budget of 1886-87 for carrying out the work. It is hoped that the Municipal Commissioners will be enabled soon to carry out the scheme to completion. *Bhagulpore town*—The Soojaganj bazar drainage scheme has been completed by the Public Works Department. It consists of a set of saucer drains laid throughout the length of the bazar with gradients towards certain outlets. This work is a great improvement. In the *Purneah* town the drains at Line bazar and Lalbagh were opened out and their bottoms lowered; a canal four miles long and 12 feet wide was excavated, and a splendid bridge was constructed over the Ganges and Darjiling Road for the drainage of the marsh in the old station. These works are calculated to have an important bearing on the drainage of this Municipality. The drainage scheme originally adopted in the *Cuttack* town was worked out as far as possible by the construction of a drain in the eastern end of the town from Samia Talao to the main channel to remove collections of water from jhils and low places in Buxee bazar, Kishurpore and Thorya Sai, and a further extension was commenced at Mahendipore by making a branch drain with two bridges.

In Towns.

239. The carrying out of the Supai drainage scheme in *Midnapore*, to which allusion was made in the Report for 1884, was continued at a cost of Rs. 73,800 during the year under review. In the *Dinajpur* district the drainage canal* for the town was maintained by the Road Cess Department. This is an important work. A commencement has been made in pergunnahs Gungamondal and Patikaia, north of Comillah, in the district of *Tipperah*, in establishing the old system of

In Districts.

drainage, the neglect of which caused increase of mortality. With this intention silted up water-courses are being opened out by the Road Cess Department. In the Government Estates in the Sasseram sub-division and in the town of Nasriganj, belonging to Government, in the district of *Shahabad*, commendable efforts were being made for the improvement of their drainage, conservancy and water-supply arrangements. These efforts were directed towards constructing kutcha drains along the sides of lanes to regulate the drainage; using the earth excavated in levelling the roads between the drains; cleansing foul spots and converting them into roads or open spaces with the view to prevent them being fouled again; filling up objectionable holes and converting large excavations into tanks; sinking wells, &c. Much progress was made in these directions. Four excellent wells were sunk and several more were in hand and sweepers were engaged to proceed from village to village and remove refuse. For these purposes Government gave Rs. 850, and the Joint-Magistrate was raising local subscriptions to progress with the work which is very expensive. The obstruction of drainage caused by the Bengal and North-Western Railway embankment, which runs for a length of 80 miles through the district of Sarun referred to in the Sanitary Report for 1884, received attention this year. The Railway authorities opened new culverts or barrel drains throughout the line wherever they appeared to the Magistrate to be wanted.

Sanitary defects.

240. **Port of Calcutta.**—The following facts were brought to notice by the Health Officer. On the shipping complaining against the latrine belonging to the Messageries Maritimes Compagnie and a private latrine, both situated on the banks of the river, the Suburban Municipality was communicated with to remedy the defects. It was found that foul water containing large quantities of night-soil was constantly discharged into the river from a khal which extends back from the river far to the east of Garden Reach passing through a crowded neighbourhood. On the banks of this khal there are numerous kutcha privies, the contents of which are thrown into the khal by the Suburban municipal mehters. There are numerous latrines on the river bank on Tolly's nullah and at other spots, the survivals of the old system of discharging the night-soil into the river or other convenient water-courses. This pollution of the river is a serious nuisance, but it constitutes only one of the many grave sanitary evils which obtain in the Suburban Municipality. Dr. Lynch says that "representations to municipal bodies are almost useless; the difficulty of controlling their conservancy establishment being apparently beyond their power." Complaints were made of the foul smells which escaped from the flushing inlet of No. 3 main sewer which leads from the river at No. 2 Jetty. Cases of cholera had occurred in two steamers at this jetty in April. In November the condition of the inlet was unusually offensive, torrents of sewer gas escaping under the jetty. Complaints were made, and it was explained by the Engineer of the Calcutta Municipality that the nuisance was due chiefly to the present deficiency of water for flushing purposes, but that arrangements were being made to remedy this defect. This is a serious evil which the Municipality should take particular care shall not recur.

Public Latrines on the Foreshore.

241. Two of these conveniences were opened during the year, one at Kidderpore below Hastings' Bridge, and the other on the Strand Bank at Ahiritollah.

Corpses and Carcasses in the River.

242. There was nothing to complain of under this head.

Water-supply.

243. Filtered water was, as usual, supplied to the shipping. No complaint on the subject was received, but the Health Officer suggests that the present primitive plan of carrying water to the vessels which does not preclude its pollution, should give place to properly constructed water tank-boats in which the water will be inaccessible, except through the pump, and in which facilities of cleansing will exist.

Value of Sanitary Improvements effected this Year.

244. Taking a general review of the progress made in sanitation as above detailed, I trust it will be allowed that a large amount of good and useful Sanitary Work was accomplished this year.

MISCELLANEOUS SANITARY OPERATIONS DURING THE YEAR.

Extension of Sanitary Laws.

245. The Bengal Municipal Act III (B.C.) of 1884 was extended during the year to the Towns or unions of Julpaiguri, Assensole, Ferozepore, Daudnagar and Tikari, and various parts or sections thereof, which had not been introduced into many Municipalities at the time the law came into operation, were extended to them during the year under review. Bye-laws, framed under this Enactment, were brought into operation into the Municipalities of Darjiling and Chittagong.

The places to which the Compulsory Registration Act IV (B.C.) of 1873, the Compulsory Vaccination Act V (B.C.) of 1880, have been extended, have been mentioned in paragraphs 11 and 230 of this Report.

The following Bills are at present under the consideration of the Bengal Legislative Council:—

The Bill to consolidate and amend the law relating to Village Watchmen which has a very important bearing on the Registration of Births and Deaths in Bengal in the manner described in paragraph 8 of this Report.

The Bill to amend the Bengal Vaccination Act V of 1880, the object of which is to correct the defects in the present Enactment in that it does not secure sufficient protection to immigrants, persons on board of vessels arriving in the Port of Calcutta, visitors, and temporary sojourners, and to enable public vaccinators to have reasonable access to dwelling-houses and to vessels in Port, to ascertain whether the inmates are protected or not.

The Bill entitled the Calcutta Municipal Consolidation Act, the main object of this Enactment being to amalgamate certain parts of the Suburban Municipality with the Calcutta Municipality, the proposed amalgamation consisting of portions of Entally, Baniapookur, Ballyganj, Talliganj, Bhowanipore, Alipore, Ekbalpore, Watganj and Garden Reach.

Sanitary condition of the Calcutta and Goalundo Emigration Depôts.

246. The reports received from the Inspectors of Emigration, Calcutta and Goalundo, which have been separately submitted to Government, show that the sickness and mortality in the depôts had diminished in comparison with their incidence in the preceding year, there being little cholera and no small-pox; and that there was nothing to complain of with regard to accommodation, food, water, medical assistance, vaccination, &c.

Effect of steeping Jute in water on health.

247. In obedience to orders in paragraph 12 of the Resolution of Government of the 31st October 1885 on the Annual Report of this Department for 1884, requiring me to notice specially in my present Report the question of steeping of jute in tanks and water-courses proving a harmful source of pollution of water, I issued a circular to all Civil Surgeons and Deputy Sanitary Commissioners requesting them to submit in their next annual report all the information they could collect as to where, how far, and in what manner the process has, by pollution of the water, proved prejudicial to health.

Before submitting an abstract of the reports received from the Civil Surgeons and from the superior Officers of the Vaccination Department, I should mention that Dr. Smith, when Sanitary Commissioner for Bengal, brought the evils of this practice to the notice of Government in his letter No. 219A, dated the 13th December 1869, but that it does not appear that any definite orders were passed on the subject; and that I also, on the motion of Dr. Ghose, the Civil Surgeon of Rungpore, did the same in my letter No. 743 of the 13th of March 1882. Dr. Ghose's opinion was that this measure has a deleterious influence on the public health, and is one of the potent causes of disease; and he suggested that, as legislation in this matter is questionable, and as it would affect a valuable industry of the country, a process, said to have been initiated in America for separating the fibre without previously decomposing the jute plant in water, be introduced into Bengal. The Government in reply [*vide* letter (Medical and Municipal Department—Sanitation) No. 75, dated the 27th March 1882] said that the Lieutenant-Governor's attention had shortly before been drawn to a machine said to have been invented by Messrs. Dennis and Angell, of the United States of America, for the preparation of the fibre of jute, and that the

Government of India had been asked to procure one of the machines, together with such further information as may be available in regard to the patent, for trial in Bengal. But I have not been favoured with any further communication on the subject.

Extent of country affected by the process.

Midnapore.	Mozufferpore.
Backergunge.	Sarun.
Chittagong.	Monghyr.
Noakhali.	Puri.
Patna.	Manbhum.
Shahabad.	

248. Jute is not grown in Gya, Chumparun and Singbhum, and very little, rarely, or only for home consumption, in the marginally-noted districts. No reports were received from Birbhum, Darjiling, Dacca, Faridpore, Durbhanga and Hazaribagh, and the reports from Hughli, Rajshahye, and Purneah contain no information of any value. The latter are therefore dismissed from consideration in this Report.

Jute-steeping is carried on generally or extensively in Jessore, Dinajpur, Rungpore, Bogra, Pubna, Monghyr, Bhagulpore, Mymensing, Tipperah, Maldah and Julpaiguri, particularly in Boda, Patgram, Julpaiguri and Shikarpore thanas and to the south and west of Mynaguri in the Julpaiguri district. On the other hand, it is carried on to a limited extent in Burdwan, Serampore, Howrah, Cuttack, in thanas Baraset, Goberdanga, Baduria and Basirhat in the 24-Pergunnahs, in Nuddea, in the Satkhira sub-division and in the north-eastern portion of the Khulna district bordering on Faridpore, in thanas Nowgong, Mandah and Burigram in Rajshahye, and in Purneah.

Waters in which Jute is steeped.

249. In Burdwan and Serampore the jute is steeped in pools and railway cuttings outside the villages, not in the drinking-water tanks; in Howrah in such ponds or tanks the water of which is not used at all for any purpose; in the 24-Pergunnahs in road-side drains and in small and old tanks, but not in tanks and water-courses from which drinking water is taken; in Nuddea in cess-pools and shallow bhils; in Jessore in water not used for drinking purposes; in Dinajpur and Rajshahye in tanks and water-courses; in Rungpore in any and every collection of water and in the side cuttings parallel to the railway; in Bogra in ponds containing rain-water, not in tanks; in Pubna in every lodgment of water in the fields or in the sides of roads close to dwellings and in the running streams; in Julpaiguri the most convenient piece of water in the jute field is selected, whether it be a drain or a special reservoir, sometimes close to the houses; in Mymensing in dobas, old tanks, khals, bhils, nullas, the river, hollows, holes and ditches; in Tipperah in khals, bhils, and ditches; in Purneah in pits and hollows and old channels of rivers which have no connection with the rivers, in the belief that water of a warmer temperature than river-water is necessary for the separation of the fibre, and consequently the process is not carried on in rivers and wells which supply the drinking-water in this district; in Maldah in khals or in stagnant pools and not in running streams or tanks; in Monghyr and Bhagulpore along rivers and water-courses, and in small excavations containing water left behind after subsidence of floods, and in Cuttack in jhils and khals in the vicinity of the villages.

Effects of the process on Health.

250. Under this head definite information has not been received from the majority of the districts, the main reasons being perhaps that the circular of enquiry was issued after expiry of the jute-steeping season, and that the inundations, occurring exactly at the time when the jute plants were in the fields, destroyed them. The steeping takes place in August and September. Noteworthy information has, however, been furnished from the following districts:—*Khulna.*—Dr. Ghose is unable, from his limited experience in this district, to state what relation the process bears to health in it; but he notes that "whatever gives rise to organic decomposition in the water, atmosphere, or soil, necessarily gives rise to specific diseases, such as fever, cholera and bowel-complaints. It tends also to reduce the physique and stamina of the people drinking such water, breathing such atmosphere, and living on such soil." *Dinajpur.*—Dr. Mookerjee states that, while the process certainly pollutes the water and must render it deleterious to health, it is difficult to say in what manner and how far it is baneful. Dr. Wood, the Deputy Sanitary Commissioner, and Tajamul Hossein, the Deputy Superintendent of Vaccination, Darjiling Circle, note that in their inspections of villages in several thanas in the Dinajpur district they found that the

popular belief was that the effects of jute steeping in water that is drank are fever, diarrhœa, colds and cough, colic, and vomiting. The former Officer adds that he was informed by Civil Hospital Assistant Koilash Chunder Chuckerbutty, in charge of the Rayganj Dispensary, that fever and diarrhœa are caused by drinking this water, as he saw many cases of this; that in village Aladi, in thana Neetapore, no ill-effect was observed although the polluted water is habitually drank; and that although it is drank by cattle, no disease follows it. *Rungpore.*—The Civil Surgeon says it is a nuisance and a cause of ill-health; but the Magistrate states that the water is not used for drinking by man or beast. *Julpaiguri.*—Dr. Ashe says that the people do not drink the water, but it is used for ablution and washing of clothes and utensils, and that he is of opinion that as the drinking well is situated close to the places where the jute is steeped, its water must of necessity be contaminated with decomposing vegetable matters, and that when evaporation of the water in which jute is steeped takes place in the winter months, it must add to the general unhealthiness of the district. *Mymensing.*—Dr. Moorhead, the Civil Surgeon, is of opinion that if jute is steeped in small tanks and the water used for drinking or culinary purposes, it is injurious and induces indigestion, diarrhœa and fever, and destroys the fish, and that those who eat the fish are subject to indigestion and diarrhœa; that the effects of the process if carried on in water-courses vary: if the water-course is of considerable size and there is a good current little or no injury appears to follow; but if the amount of water is limited and the current slow, more or less digestive derangements, and probably fever, result from using the water. *Noakhalli.*—The Civil Surgeon thinks that the stench arising from the process must add to the many insanitary conditions of the dwellings and their surroundings which cause unhealthiness; but that no special disease traceable to the process has been observed. *Tipperah.*—The Civil Surgeon notes that as the water is not drank, there is no detriment to health; but the Magistrate, Mr. Skrine, reports that a severe outbreak of malarious fever at Tandunk, in the north of the district, was distinctly traced to the pollution of the water-supply by the steeping of jute in tanks and streams, and he is of opinion that so long as such water is not drank no harm whatever arises, but that if it is drank without boiling it causes enteric fever. *Maldah.*—Dr. Wood, the Deputy Sanitary Commissioner, Darjiling Circle, states that the same diseases which occurred in Dinajpur, as above reported, are said to follow the use of water in which jute has been steeped in this district; and he adds that he was informed by Mr. Reily, the Manager of the Chanchal Estate, that jute water has the worst effect in exceptionally dry seasons, for then the process is carried on in tanks near the villages, and the villagers have no choice but to use the water of these tanks, or are forced to resort to other sources for their supply, or use water of filthier pools and puddles, and that this water kills the fish at the time when they spawn, so that one source of food-supply is destroyed. He adds that the villagers generally deny the use of water in which jute has been steeped, but that he found that it was being used in one village, and that the people said that its use produced no ill-effects. Assistant Surgeon Kasi Nath Ghosh, Deputy Sanitary Commissioner, Sonthal Pergunnahs Circle, reports that fever and cholera are known to prevail in most of the localities in his circle about the same time of the year (September, October and November) when the process of jute steeping is carried on; and that from this coincidence of facts it may be reasonably suspected that these diseases are the outcomes of a practice which cannot but contaminate the water to a great extent.

On the other hand, negative information on the subject was received from the following districts:—In *Burdwan* the people are not unmindful of the purity of their drinking-water. In *Serampore* no ill-effects were perceived or noticed, and the process is considered more a nuisance than injurious to health; but Dr. Gregg is of opinion that if carried on to a large extent it must affect the neighbourhood, and should not be permitted in Municipalities. In *Howrah* no instance has been recorded in which jute-steeping has proved a harmful cause of pollution of water. According to the observations of the Officiating Deputy Superintendent of Vaccination, Metropolitan Circles, the

popular opinion in Dumjoor thana is that jute renders water unfit for use, and the same Officer states that in some villages in the same thana he observed on both sides of the main road the jute plants rotting and rendering the water most offensive, so much so that no one could pass without putting his handkerchief or chudder to his nose. *24-Pergunnahs.*—Dr. Joubert says that the smell from jute undergoing steeping should be actively pernicious requires yet to be proved. The process is carried on at a time of the year when fever is specially prevalent everywhere, both in places where it is carried on and where it is not, so there can be no connection between the two facts; but the people appear to be generally of opinion that water in which jute is steeped causes diarrhœa, and so, as a rule, avoid such water. In *Nuddea*, *Jessore*, *Bogra* and *Sonthal Pergunnahs*, the process does not appear to have been injurious to health. In *Pubna* the water is not used for drinking or bathing purposes, excepting that of streams which does not seem to be polluted on account of their strong currents; and owing to the inundations and the prohibiting order issued by the Magistrate not to steep jute in streams with dull currents, the public health does not appear to have been injuriously affected. In *Cuttack* the process does not seem to affect much the health of the people; and the Deputy Sanitary Commissioner, Orissa Circle, says that the bhils and khals in which jute is steeped overflowing during heavy rains drains into the nearest rivers and reservoirs.

From the foregoing reports it is clear that the immunity from sickness is simply due to the people not using for drinking and culinary purposes the water in which jute has been steeped, for in the majority of instances, wherever such water has been used, sickness has followed its use. It is natural that the people should avoid drinking water having such a nauseous smell, but while, happily, the majority of the people do avoid such water, the instances are not wanting where they deliberately use it.

Collateral information elicited during the enquiry.

251. The Officiating Deputy Sanitary Commissioner, Metropolitan Circles, states that a good deal of bamboo steeping goes on in village Moshat, in thana Chunditolla in *Hughli*, which must be very injurious as it kills even the fish; but the villagers do not drink the water in which the bamboo is steeped. *24-Pergunnahs.*—Dr. Joubert mentions that the smell from bamboo-steeping is to his knowledge most overpoweringly nasty, but that it should be actively pernicious has yet to be proved.

Quarantine Station.

252. PORT OF CALCUTTA.—A suitable piece of ground, admitting of safety of anchorage, accessibility from the ship and the shore, and to leeward of the prevailing winds, &c., has been selected for a quarantine station in place of the station at Royapore, which is to be abandoned.

Issue of Bills-of-health to the Shipping.

253. Under instructions from the Government of India, the issue of Bills-of-health to the shipping by the Health Officer of the Port commenced from the month of September.

Sanitation promoted by District Officers and Others.

254. Mr. Warde-Jones of Birbhum exerted himself to effect the removal of dung-heaps and the keeping of villages in his Sub-division in a more cleanly state, and action was taken in the same direction through the Police by the Magistrate of the same district. The Managing Committee of Sreepore Hitoshadini Shova of the Debhatta Municipality have, with praiseworthy liberality, undertaken to distribute medicines to the poor and render assistance to the helpless of the town in question. In this way they afforded treatment this year to 213 persons suffering from cholera, fever, bowel-complaints, and other ailments, with the result that, excluding 40 patients who declined further treatment and three who remained under treatment at the close of the year, 166 were cured, and four died, the deaths being caused by cholera. Mr. A. D. Christian, of the Bongong Factory, in Bhagulpore, exerted himself to cleanse and fumigate the village during an out-break of cholera, but the village has since relapsed into its normal state of filthiness. Similar exertions were made by Munshi Syad Golam, Vice-Chairman to the Branch Road Cess Committee of the same district.

SECTION X.

PERSONAL PROCEEDINGS.

PROCEEDINGS OF THE SANITARY COMMISSIONER.

Officer in charge of the Office during the year.

255. I was in charge of the Office throughout the year.

256. The 27 marginally named Municipalities were inspected by me during the year, against the same number in the preceding year. Of these towns, the sanitary conditions of only Darjiling, Goalundo, Ranchi and Purulia were found to be fairly satisfactory, particularly of the first-named town. In all the rest many sanitary defects, more or less grave, existed; but Kishnaghur, Khulna, Nassirabad, Faridpore, Julpaiguri, Rungpore, Pubna and the Suburbs of Calcutta were in the worst possible condition, notably the last-named Municipality. Compared with their conditions at the previous inspection, Dacca, Naraingan j, Dinajpur, Bogra, Beauleah, Purulia, Puri, Barisal, Hazaribagh and Bankura were found to have effected creditable improvements; while in Faridpore, Rungpore and Chyebassa retrogression in sanitary status—the result of neglect—was seen to have occurred. Fuller details regarding the conditions of the towns inspected will be found in Appendix IV to this Report, and it will be shown hereafter that many of the minor towns were visited and inspected by some of the officers of the Vaccination Department. I should note that there is strong evidence in the annual reports, and in the proceedings at municipal meetings on sanitary questions submitted to this office, to indicate that much activity is displayed and a zealous attention maintained by the Commissioners of a good many towns with regard to the sanitary interests of the towns committed to their charge, while on the other hand instances of neglect and indifference are not wanting.

In January.
Balasore.
Cuttack.

In February.
Puri.
Kishnaghur.
Jessore.
Khulna.
Barisal.

In March.
Midnapore.

In May.
Darjiling.

In June.
Darjiling.

In August.
Nassirabad.
Dacca.
Naraingan j.

In August—(concld.)
Faridpore.
Goalundo.
Julpaiguri.

In November.
Dinajpur.
Suburbs of Calcutta.
Rungpore.
Bogra.
Beauleah.
Pubna.
Raniganj.

In December.
Hazaribagh.
Ranchi.
Chyebassa.
Purulia.
Bankura.
Suburbs of Calcutta.

Other places inspected, and reports on sanitary questions relating to them submitted to Government.

257. In orders No. 1109, dated the 14th September 1885, I was requested to visit the villages and towns on the Grand Trunk Road and to the west of Hazaribagh where cholera was alleged to be actively prevalent, and to submit a report on the sanitary condition of the localities, and on the steps which should be taken for the better protection of the people from epidemic diseases. I was also desired in orders No. 105 of the 9th January 1886 to suggest measures for the proper conservancy of the places in which cultivators assemble to weigh opium. I submitted the required reports, and a brief *resumé* of my opinion and suggestions on both questions will be found in paragraphs 99 and 91 of this Report.

At the request of Government in endorsement No. 130, dated the 9th May 1885, I visited the Julpaiguri Jail, enquired into the health status of the prisoners, the sanitary arrangements obtaining in the jail, the condition of the jail buildings, &c., and suggested the following reforms with a view to bring about an abatement in the heavy mortality among the prisoners, the majority of whom showed full evidence of malarial poisoning, as was expected in prisoners drawn from the extremely unhealthy sub-terai district of Julpaiguri:—(1) Certain arrangements for the better ventilation and protection from rain of the sleeping wards; (2) more liberality in, and greater variety of, the diet of the prisoners; and (3) keeping the jail surroundings clear of rice cultivation carried on in the drainage channels near the jail, and keeping the neighbourhood of the Municipality free from low jungle.

My opinion being asked in orders No. 2552T—M of the 23rd November 1885 on the objectionable process adopted by the Manager, Eastern Bengal State Railway, in filling up some tanks near the Sealdah station, I stated that it was within my knowledge (and the action of the Calcutta Corporation, who have had great experience, pointed in the same direction) that dewatering tanks prior to placing rubbish in the hollows lessens the nuisance of a process which is always more or less disagreeable, and that I had seen the very worst conditions brought about by the neglect of this precaution, and by throwing sweepings into water to cut short the period within which offensive smells may be given out, as contemplated by the Manager. I added that if the tank is fully filled up to provide against sinkage, and no inward drainage is allowed so as to form a pool of foul water in the centre, there will be no foul smells arising from it, either during or after the rains, provided it is sufficiently covered with a deodorant layer of earth which is left undisturbed.

Exhibits relating to sanitation for the Administration Court of the London Exhibition of 1886.

258. In compliance with Government orders on the subject, I submitted the exhibits of this department for the Administration Court of the London Exhibition of 1886. They consisted of a note on the constitution, organization and functions of the department of the Sanitary Commissioner for Bengal in connection with its sanitary and vaccination branches; of the registers and returns kept up, and of appendices, consisting of the annual sanitary and vaccination reports prepared and submitted since the organization of the department in 1868; of an abstract statement showing the birth and death statistics from 1871 to 1884, of an abstract statement showing the number and other particulars of vaccinations performed during 1880-81 to 1884-85, and of the Enactments relating to the compulsory registration of births and deaths, to compulsory vaccination, to inoculation, to municipal administration, and to local self-government.

Lectures on Hygiene delivered at the Medical College

259. In the capacity of Professor of Hygiene in the Medical College, I delivered 20 lectures on the subject to 40 students.

PROCEEDINGS OF THE HEALTH OFFICER OF THE PORT OF CALCUTTA.

Inspection of Vessels.

260. The Health Officer of the Port of Calcutta inspected all the inward and outward bound vessels, the former numbering 780 with 35,879 European and native seamen on board, against 715 with 30,992 seamen in the preceding year, and the latter amounting to 626 vessels with 25,466 seamen, against 482 with 15,579 seamen, aggregating 1,406 vessels with 61,345 seamen against 1,197 and 46,571 respectively, *vide* details marginally given. These figures indicate that there was a considerable increase of inspections, which is reported to be partly due to the new system introduced in September of granting Bills-of-health after inspection of vessels. I am of opinion, from a review of the Health Officer's report, that good, assiduous, careful and exhaustive work had been performed by him.

	Inward bound.		Outward bound.	
	1885.	1884.	1885.	1884.
VESSELS.				
Foreign ...	646	642	551	474
Coasting ...	134	73	75	8
Steamers ...	387	321	239	114
Sailing vessels...	393	394	387	368
SEAMEN.				
Europeans ...	18,989	17,750	15,332	11,350
Natives ...	16,890	13,212	10,134	4,229
Total ...	35,879	30,992	25,466	15,579

PROCEEDINGS OF THE NATIVE SANITARY INSPECTOR OF THE PORT OF CALCUTTA.

261. The Native Inspector of the Port inspected 9,989 boats and 311 latrines, and found 238 of the former and 16 of the latter in a filthy condition; made 216 complaints to the police; traced 171 cases of sickness on board of boats; and inspected 126 police water-boats. Compared with the work of the preceding year, it will appear that less work was performed, particularly with regard to boats inspected; but it should be mentioned that the work above exhibited is short of that actually performed by the Inspector which cannot be shown, owing to the records of July and part of August having been lost when his dinghy was upset in the river during the dangerous freshets of August. The Health Officer is of opinion, and I agree with him, that this officer performed his duties satisfactorily, displaying much activity, intelligence and diligence in their performance.

PROCEEDINGS OF THE OFFICERS OF THE VACCINATION DEPARTMENT IN CONNECTION WITH THEIR SANITARY DUTIES.

Details furnished under this head.

262. Under this head, I propose in order to avoid prolixity, to omit mention of all ordinary descriptive and minor sanitary details of the villages inspected, recording only such observations as are interesting, deal with extremely insanitary local conditions, or point to some other marked peculiarities attaching to localities calling for the special attention of Government, particularly as it would be simply going over the same ground which was gone over in the Report of 1884, the villages in Bengal being in point of their sanitary status much alike. I should, however, state that the inspections of most of the officers in this direction were carefully performed, and that their observations, briefly summed up, disclose the following defects as common, to a more or less extent, to all the villages which were visited, with very few exceptions. *Dwellings* badly constructed, ill-arranged, crowded together and devoid of ventilation. *Roads* narrow and unmetalled, chiefly consisting of tortuous bye-paths, and unprovided with side drains. *Pits, hollows* and other *excavations* common and allowed to become receptacles of every description of festering filth or of stagnant water. *Conservancy* conspicuous by absence; defœcation and micturation being performed anywhere; human and cattle *excreta*, and all kinds of house and other refuse, being accumulated and permitted to fester near houses. *Water-supply* for drinking and domestic purposes taken from any source, no matter how polluted or fouled. *Drainage* mostly absent, or, if existing, defective and obstructed. And all these are the result of the apathy and indifference displayed by the people to the simplest elements of sanitation, and who moreover fail to recognize any wrong in conditions which have descended to them from their ancestors. The inspecting officers also tested registration, and their reports were forwarded to the local authorities for the necessary action, and during their tours they pointed out to the people the insanitary conditions in the midst of which they lived, and the probable effect of these conditions on their health status, and urged reforms in the matter. These points will not again be mentioned in this Report, unless it be necessary.

263. The number of villages which were visited by the Deputy Sanitary Commissioners and the Deputy Superintendents of Vaccination for sanitary inspections are exhibited in the marginal table. This table does not show the number of villages which were visited by Mr. Lyons, the Deputy Sanitary Commissioner of the Eastern Bengal Circle, as no report on the point or diaries (excepting the diaries for November and December) have been submitted by him, notwithstanding repeated reminders for them; and for fairness of comparison of the general results similar information for this circle for 1884-85 has not been inserted in the table. It should also be mentioned that of the 395 Deputy Sanitary Commissioner's village inspections in the Metropolitan Circle, 47 were made by Dr. Gupta and the remainder by Dr. Mullen: of the 281 in the Ranchi Circle, 105 by Dr. Owen and the remainder by Dr. Waddell; and that of the 2,390 Deputy Superintendent's inspections 74 had been made by Assistant Surgeon Neem Chund Gupta. Keeping these facts in view, it will be seen from the marginal table that on the whole the sanitary condition of 5,206 villages was enquired into this year, viz. of 2,816 by the Deputy Sanitary Commissioners, and of 2,390 by the Deputy Superintendents of Vaccination, against 4,819, viz. 2,579 by the former class of officers and 2,240 by the latter, indicating improvement in the inspection work of both the Deputy Sanitary Commissioners and Deputy Superintendents, represented by 237 additional villages inspected by the former and 150 by the latter, culminating in a net increase of 387 villages inspected. These inspections,

Number of Villages inspected.

Circles.	By the Deputy Sanitary Commissioners.				By the Deputy Superintendents of Vaccination.			
	Number of Officers in—		Number of Villages inspected in—		Number of Officers in—		Number of Villages inspected in—	
	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.	1885-86.	1884-85.
Metropolitan	1	1	395	613	5	5	2,155	2,051
Darjiling	1	1	200	93	2	2	175	164
Ranchi	1	1	281	479	1	1	60	25
Sonthal Pergunnahs ...	1	1	345	32	No Deputy Superintendents in these circles.			
Orissa	1	1	1,155	963				
Behar	1	1	440	899				
Total ...	6	6	2,816	2,579	8	8	2,390	2,240

however, involve heavy clerical work in making the consequent reports, and I purpose to reduce their number during the next season. This, I think, can be done, and yet sufficiently full information afforded. Considering the inspections in each circle separately, improvement is indicated on the side of the Deputy Sanitary Commissioners of the Sonthal Pergunnahs, Orissa, Darjiling and Behar Circles, and of the Deputy Superintendents of the Metropolitan, Ranchi and Darjiling Circles, in the order named; and retrogression on the side of the Deputy Sanitary Commissioners of the Metropolitan and Ranchi Circles, caused no doubt by changes of officers, necessitating the new incumbents devoting the time they could have employed on inspection duty to learning the details of their work. On the whole, however, I hope it will be allowed that good inspection work has been accomplished during the year under review.

Work of the subordinate Officers of the Department.

264. The Inspectors, Native Superintendents and others holding similar rank visited 23,498 villages, against 25,769 in the preceding year for the purpose of ascertaining the number of deaths which occurred in them, and verifying the information obtained with the entries of the events made in the registers kept up at the thanas to which the villages are attached. A very large number of their verification statements were received and dealt with in the manner mentioned in paragraph 294 of my Report for 1884-85. The improvement in registration effected this year is no doubt associated with this procedure.

Submission of Diaries.

265. All the Deputy Sanitary Commissioners and Deputy Superintendents of Vaccination, excepting Mr. Lyons of the Eastern Bengal Circle, regularly submitted Diaries of the sanitary and vaccination work performed by them. The reports supplied in the diaries of this year were, with few exceptions, of a better character, and contained more carefully considered information, notably those of Dr. ffrench-Mullen and Assistant Surgeon Preumber Nath Mitter of the Metropolitan Circles; of Assistant Surgeon Kasinath Ghose of the Sonthal Pergunnahs Circle; and of Drs. Owen and Waddell of the Ranchi Circle. Commendable care was also bestowed by Mr. Naidu of the Orissa Circle in the preparation of his diaries. I am also glad to record that an examination of the diaries of this year disclosed much less perfunctory work than during 1884-85, *vide* paragraph 295 of that Report.

Reports on the Health condition of the Villages, &c., inspected, and recommendations made for rectifying Sanitary defects.

266. The following condensed summaries of the health, condition, &c., of the villages inspected have been extracted from the reports on the subject submitted by the Deputy Sanitary Commissioners and Superintendents of Vaccination for the year under review.

267. METROPOLITAN CIRCLE.—*Dr. ffrench-Mullen, Officiating Deputy Sanitary Commissioner.*—This officer's sanitary inspections extended over 341 villages and seven towns, situated in the districts and thanas named in the margin, which he visited during the four months of the working season commencing from the 1st of December, during which he was in charge. The subjoined observations, taken from his report which has been carefully drawn up and contains much information of value, relate to these villages. *Habits of the people*:—Dr. Mullen's experience does not accord with those of other sanitary officers, who say that the villagers keep their houses and their surroundings in a filthy condition. He reports that the natives of Bengal are not naturally dirty, but on the contrary their habits are essentially clean. Each villager keeps his bari and its surroundings clean and tidy. The refuse heaps are removed to a considerable distance away, and as such refuse is used as manure for the fields, they are not of a very objectionable nature. But the habits of not keeping the spaces between the baris free of

District	Thana	
Nuddea	Coomercoli	7
	Bhaluka	4
	Bhadulia	3
	Kushtea	6
	Chooadanga ...	10
	Damurhuda ...	3
	Nowada	8
	Meherpur	16
	Kisengunge ...	8
	Hanskhali ...	17
	Santipur	1
	Ranaghat	4
Jessore	Bongong	9
	Gopalnugger ...	6
	Gaighatta	21
24-Pergunnah	Baripore	5
	Habra	6
	Baraset	33
Hughli	Chanditollah ...	31
	Haripal	40
	Singoor	15
	Dhaniakhalli ...	15
	Jehanabad ...	9
	Goghat	4
Burdwan	Royna	1
	Shahibgunge ...	8
	Gangoor ...	2
	Burdwan ...	6
	Bood-Bood ...	13
Howrah	Domjoor ...	14
	Ampta ...	21

superfluous vegetation, the village paths and drains in good order, and, above all, the drinking water protected from pollution, he considers a racial defect, but certainly not due to filthy habits. Regarding the Mahomedans, he says that they like to surround themselves with forest, their object being, he supposes, "to hide more effectually their wife-slaves from the world's view." *Water-supply.*—He suggests under this head that, where in a village two tanks of equally good water are situated in convenient proximity, steps should be taken to prevent the villagers from using both indiscriminately; that where the water is deficient, either the zemindar or Government should encourage the excavation of new tanks, by defraying a portion of the required expense, as the zemindar not only declines to help his ryots who, it should be stated, understand the necessity of, and are desirous of having pure and wholesome drinking water, but also prevents their digging a tank at their own expense, unless a *salami* is paid to him. Dr. Mullen adds that such tanks should be dug outside the boundary of the village, as he observed that tanks so situated were invariably clean, and that the villagers using the water of such tanks enjoyed comparative immunity from cholera, and, to a less extent, from fever. *Food-supply.*—The distress caused by scarcity of food appears, from Dr. Mullen's reports, to have been pretty general in his circle; but in Nuddea generally, and in the country about Dumjoor in Howrah and Jehanabad in Hughli, the people seemed to suffer severely from the effects of successive bad harvests, and in the latter place only did the people show signs of being insufficiently fed. He continues:—"I am inclined to believe that in ordinary times the Bengal peasants have a sufficiency of food, but that in many parts of the Province a bad harvest means actual want of the common necessaries of life to the poorer villagers until the next good harvest. The number of people who pass their lives in this precarious condition must be very considerable, and deserve the consideration of the Government as to the best means of removing the causes which lead to frequently recurring periods of scarcity among them. Irrigation appears to me to be the only means, and to be a sure remedy for the evil. The cutting of canals through tracts of land where natural irrigation is deficient would have the effect, not only of making the fields through which they passed more fertile, but would also afford an ample supply of water for drinking purposes." His further observations go to show that, while in many villages visited by him, even in villages where the complaint of distress was great, he found the children plump, and the women, to all appearance, fairly fed; while the adult male population was, as a rule, in a lean condition, evidently the result of hard work rather than of insufficient food. *Education among the masses of the people.*—I cannot refrain from recording here the graphic and useful observations of Dr. Mullen on this subject. He writes:—"The apathy and want of enterprise shown by the generality of the villagers with regard to their own material advancement is, to say the least, disheartening. They seem to consider life a burden, and to be quite unable to make an effort to improve their material condition. The certain remedy for this state of matters is education, and personally I look upon the spread of education amongst the masses of the rural population as the only means of lifting them out of their present lethargic state. No one who converses with the bright, quick-witted village child, then turns to speak to that child's stupid, illiterate father, can help deploring the large number of children now growing up in the villages of Bengal whom a little education would make capable of enjoying existence, but who are doomed to perpetual ignorance, with the result that they will pass their lives like their parents, incapable of healthy enjoyment and useless to the community at large. An enormous amount is being done by the Government in this matter, but the zemindars and other independent natives, who should help the Government to make its work in educating the peasants as complete as possible, seem to take little interest in their illiterate fellow-countrymen, for, as far as I was able to observe during my tour, the village schools or patshalas which receive any kind of aid from these gentlemen is insignificant in number." He also observes that the villagers are, moreover, alive to the dangers to be feared from insanitary conditions, but if left to themselves they will do nothing in the way of improvement. It is a mistake, he says, to suppose that the Bengal peasants resent any interference of Government with regard to matters concerning their every-day life, for

"on the contrary they feel pleased and gratified when the Government shows its interest in them by interference which is directed towards their advancement, and which they can understand is meant for their good, even when a certain amount of inconvenience to themselves is the result. I have no doubt that the extraordinary success which has attended the determination of the Government to vaccinate the whole of this conservative body is due to the high sense of gratitude which they feel towards a Government which takes so much pains to protect them from the scourges of a single disease." In a patshala in the village of Telegram, in thana Jehanabad in Hughli, he found eight pupils—one a girl—engaged in studying a little Bengali book called "*Sharir Palan*," or "How to preserve health," by Baboo Jadu Nath Mukerjee. It begins well, he says, by explaining the necessity of keeping the body clean; and it occurred to him that some Government aided primary schools might follow the example set by the Pundit of the patshala, as such a text-book as the *Sharir Palan* is infinitely more desirable for little boys and girls than most of those he has had an opportunity of hearing pupils read from, and which seem to consist largely of stories of little boys who stole, &c., &c. *Disposal of the Dead.*—Dr. Mullen notes that in certain localities in his circle the Bagdis and other low castes of Hindus only partially cremate their dead, and that when this is done on the banks of a river the body is cast into it and floats away; but that when it is performed on the fields, outside the village, the partially cremated body is left to be devoured by dogs and jackals. *Municipalities inspected.*—Dr. Mullen inspected the Municipalities noted in the margin, and submitted reports regarding their sanitary conditions after visiting them. Such of his observations in his reports as called for notice were forwarded to the Chairmen of the Municipalities concerned for the necessary action. He found that the Commissioners in every Municipality thoroughly realized the responsibility of their position, and were keenly desirous of improving the sanitary conditions of the towns committed to their charge; but he was in no case satisfied with their state, the most glaring offences against sanitary laws being allowed to exist unchecked. For instance, in Kumarkhali the public latrines, which are of the most flimsy construction, are never cleaned; in Ranaghat the banks of the principal municipal tank was covered with human excreta; in Meherpore, with its largely attended market, there is no such thing as a public latrine; in Santipore the Commissioners were found disputing about the propriety or otherwise of re-excavating an old tank, while that portion of the town which is farthest away from the river or any other source of pure water was suffering from want of it, which the provision of a few municipal wells would remove. Drainage was defective or nil in all the Municipalities, the drains, where they exist, being obstructed and eventually leading into some tank or excavation, thus contaminating the drinking tanks by sewage and decomposing vegetable matter. The rain-water collects in basins by the roadside or in excavations, which abound everywhere, or disappears by soakage into the earth, "leaving the organic matter it contained to become the generator of malaria and other poisonous vapours." Of the Suburban Municipality Dr. Mullen speaks thus:—"It clearly is impossible to give even an approximate notion of the filthy state of many of the bustees in this Municipality. The tanks receive the surface washings of every side, mixed with human excreta and other pestilential organic matters, so that the water they contain is utterly unfit to be used for drinking and culinary purposes. The public latrines cannot meet the demands made upon them, so the vessels overflow, and they become a nuisance to the surrounding inhabitants, even when regularly cleaned. The private latrines are not always regularly cleaned out, and are often built in dangerous proximity to tanks. The Goala bustees seemed to be islands amid seas of decomposing cowdung, while the cowsheds are so crowded that no two cows can lie down at the same time. The roadside drains fail to carry off the filth which flows into them, and which consequently collects in pools, which often are extremely offensive. Then the washings from the different tanneries are not properly disinfected, so that the drains which, from an absence of proper levelling, make unsuccessful effort to carry them off

Suburbs of Calcutta.	Santipore.
Baraset.	Meherpore.
Ranaghat.	Kumarkhali.
Kushtea.	

are a great nuisance to the inhabitants on account of the intolerable stench they give forth. Until the Goala sheds and tannery establishments are removed elsewhere, and until they are supplied with pure water conveyed through a system of pipes, it is idle to expect that the sanitary condition of the Suburbs will be anything approaching to perfection; but the principal evils complained of are, without doubt, due to a want of proper supervision on the part of the Municipal Commissioners. With little or no extra expense, and without introducing any sweeping changes such as I have indicated, the Suburbs could be made at least fairly clean. Therefore, the Commissioners responsible for their present pig-stye like condition, should be compelled to do their duty without further delay." Dr. Mullen observes that it is a pity that the large sum allotted for the sanitation of the Suburbs is not utilized, and that if nothing was done for conservancy, he doubts whether its condition could possibly be very much worse than it is.

268. *Assistant Surgeon Umesh Chunder Ghosh, Deputy Superintendent, first Circle.*—This officer inspected, for sanitary purposes, 284 villages and eight Municipalities in the districts and thanas marginally named, in 3½ months from the middle of December, when he joined his appointment on the late Deputy Superintendent, Assistant Surgeon Neem Chand Gupta, being transferred to the Medical Department of the service. The noteworthy facts contained in his report are the following:—*Water-supply.*—Under this head he observes that in some cases villagers have to walk two or three miles for a *culsi* of good water; but as this entails much labour and loss of time, which might be profitably employed otherwise, they are obliged to content themselves during their whole existence with the village water, which is insufficient in quantity and bad in quality. In these villages also the zemindars demand *salami* for permitting their ryots to provide tanks for themselves. In the Bongong sub-division the water of the Ishamutti river is contaminated by the throwing of dead bodies into it:—*Disposal of the Dead.*—This officer says that 99 out of every 100 Mahomedans to whom he pointed out the evils of interring in or near their homesteads, replied that they could not bury their dead in a place not belonging to them; but that if Government gave them a plot of ground outside the village they were quite willing to bury there. In this matter the zemindars should be induced to render assistance. In the Baraset sub-division, although there are burial-grounds in many villages, the people consider it their duty to bury their dead parents near their houses, and they do so accordingly. *Municipal Inspections.*— Of the eight Municipalities inspected by this officer, only the sanitary condition of the South Barrackpore Municipality was comparatively good. There the drains appeared to serve their purpose; the people residing near the river drank its water, some used filtered water from pipes, and the rest tank water; the Mahomedans inter their dead in fixed burial-grounds, and the Hindus cremate on the river side; but there are no public latrines. In the other Municipalities the usual sanitary defects, some of them of a grave character, were found to exist under the head of conservancy, drainage, water-supply, disposal of the dead, &c. *General Health.*—The general health of this circle was reported to be, on the whole, good; but it was noticed that many persons in the Baraset sub-division and Municipality were suffering from fever and enlargement of the spleen.

District		Number.
JESSORE.	Bongong ...	8
	Gopalnagore ...	7
	Sharsha ...	6
	Jessore ...	19
	Manirampore ...	5
	Kesubpore ...	3
	Kaligunge ...	12
	Jhenidah ...	3
	Salecopa ...	16
	Magura ...	7
	Mahomedpur ...	6
	Ghaighatta ...	9
	Kalia ...	13
	Narail ...	21
	Lohagurah ...	6
	Mohespore ...	6

District		Number.
KHULNA.	Paikgucha ...	8
	Doomuriah ...	15
	Batinghatta ...	10
	Khulna ...	7
	Bagirhat ...	14
	Mollahat ...	4
	Moreilgunge ...	30
	Rampal ...	4
24-PERGUNNAHS.	Harwah ...	5
	Bhangore ...	10
	Hosseinabad ...	1
	Baraset ...	11
	Habrah ...	8
	Naihatti ...	5
	Nababgunge ...	5

269. *Assistant Surgeon Preumber Nath Mitter, Deputy Superintendent, second Circle.*—This officer took charge of this circle on the 26th November. The former incumbent, Assistant Surgeon Kasi Chunder Dutt, left it on the 19th May to join a civil medical appointment. Practically, therefore, no sanitary inspections were made during the period between the above-mentioned dates, it not being deemed expedient to fill up the appointment

during the recess. Assistant Surgeon Preumber Nath Mitter inspected, during his incumbency, 802 villages situated on the districts and thanas marginally cited, and his observations, which have been carefully, intelligently, and exhaustively made, relate to these villages. *Soil.*—Under this head he considers the nature of the soil in Birbhum and Murshidabad, and points out the crops which it can raise, its usefulness or otherwise for house building, and that large tracts of land are lying uncultivated in thana Mouressur, in Birbhum and in thanas Gokurn and Goas in Murshidabad. *Roads*—Are the crying want in every part, excepting in Municipalities. Many are out of repair, and some of lower level than the paddy fields on either side. In the Nuddea district several roads have been breached or damaged by the floods or are in want of repairs. Thanas Goas and Bhugwangola in *Murshidabad* abound in jungle, and the jungle even in the villages is so dense as to harbour wild animals to the great terror of the people. *Drainage.*—Want of drainage is said to be the most unsatisfactory feature in the sanitation of the *Nuddea* and *Murshidabad* districts, and its effect is seen in the bad health of the people when rain is not attended with flooding from large rivers. *Water-supply.*—Scarcity of water is grievously felt in most parts of *Murshidabad* and *Birbhum* in the dry season, the people loudly complaining of this want. The tanks being few in number are insufficient for the requirements of many villages, or are altogether wanting in some, and, with few exceptions, are shallow, and many of them require to be cleaned out. *Disposal of the Dead.*—The pauper dead are still cast into water-courses in some parts of thana Bhugwangola in *Murshidabad*. *Inundation and scarcity—Birbhum.*—The deposit of silt by the overflow of the Moyurakhi river is said to have materially assisted the cultivation of the *rabi* crops, which were better this year than during the past three or four years. It was observed that thana Bolepur is, owing to its natural water-courses, vulgarly called kandars, advantageously situated for irrigation, and hence the outturn of paddy was better than in the other thanas. The people in the Mouressur and Nulhati thanas suffered much from scarcity of food, the result of insufficient or untimely rains. In the latter thana relief works had to be improvised. *Murshidabad.*—Here the floods added to the distress already experienced owing to three successive years of deficient harvest. *General Health*—Was better in all the three districts than during the three preceding years. Thanas Nulhati and Dubrajpur in Birbhum kept better health than the other thanas, owing, it is said, to their being hilly. Thana Bolepur in the same district is said to have been much depopulated by the malarious fever which prevailed severely in it a few years ago, and is still lingering on in villages comparatively free from dampness and jungle. The Kushtia thana in *Nuddea* was more free from fever than the rest of the thanas.

District	Thana	Number
Birbhum	Nalhati	14
	Moorarce	8
	Mouressur	23
	Suri	42
	Dubrajpore	23
	Bolepore	35
	Ramporehat	17
	Labpore	16
	Sakulipore	14
Murshidabad	Raghunathpore	20
	Dewanserai	33
	Suti	22
	Shamsherganj	25
	Kandi	48
Murshidabad—concluded	Bharutpore	60
	Khargaon	1
	Bhagwangola	34
	Sagardighi	25
	Kaliangungo	16
	Goas	57
	Daulatbazar	12
	Shahanuggur	6
Nuddea	Kushtea	19
	Kumarkhali	91
	Bhaluka	30
	Bhadulia	42
	Naupara	36
	Daulutpore	33

Birbhum. | Murshidabad.
Nuddea.

270. *Assistant Surgeon Jadub Chunder Ghose, Rai Bahadoor, Deputy Superintendent, third circle.*—This officer was in charge of this circle throughout the year, excepting from the 20th to the 30th November, when he officiated as Superintendent. His inspections extended over only 52 villages situated in the districts and thanas named in the margin, and the following abstracts taken from his observations relate to those villages. *Drainage*—Is very defective in all the districts, and in Burdwan there is none, but this, according to this officer, does not affect the health of the people, as

District	Thana	Number
Burdwan	Kalna	3
	Boodbood	2
	Kaksa	1
	Montessur	4
Hughli	Panduah	1
	Balagur	2
	Jehanabad	2
	Singoor	2
	Chunditalla	1
Howrah	Dumjor	5
	Wluberia	2
	Bagnan	1
	Amta	2
	Dhaniakhali	5
24-Pergunnahs	Bistopore	3
	Sonarpore	1
	Bankipur	3
	Diamond Harbour	2
	Satgachi	4
	Atchipore	4
	Baripore	2

the villages are situated on high land having a natural drainage. *Inundations.*—The Deputy Superintendent reports that he has closely observed that the inundations in his circle did not affect the public health injuriously, the people enjoying as good health as in any previous year, although a "good amount of vegetable decomposition was going on in every side." *Water-supply.*—Burdwan possesses some large tanks. They contain good clear water, but some of them are fouled by bathing and washing in them and defœcation on their banks. The excellent water of the Roopnarain river cannot, it is said, be used by the people living along it, for fear of the crocodiles which abound in it. *General health* was pretty fair in this circle.

271. *Assistant Surgeon Ashootosh Law, Deputy Superintendent, fourth circle.*—This officer was nominated to this circle during the year, and he joined the appointment on the 26th November. He inspected, for sanitary investigations, 564 villages situated in the marginally noted districts and thanas, and the following notes have been taken from his report, which, it should be stated, is rather meagre in observations other than ordinary. *Water-supply.*—In some villages stones are put around the mouths of the wells about a foot high, and in some earthen parapets are raised around them, to prevent pollution of the water. *Conservancy.*—One reason why the privies in the mofussil cannot be attended to is said to be that the superstitions of the people will not permit them to have a mehter living amidst them as a neighbour. *Towns inspected.*—This officer also inspected the towns of Tumlook, Chunderkona, Khirpai, and Ramjibunpur in Midnapore, and the Bissenpur town in Bankura. The sanitary condition of all of them, excepting Tumlook, was, he says, more or less bad. *General health*—Was, on the whole, good, but in the Dantoon and Sudder thanas of Midnapore many people were met with suffering from chronic enlargement of the spleen, attributed to use of foul water.

District	Thana	Number.
MIDNAPORE.	Midnapore	21
	Dantou	12
	Gopibullubpore	11
	Salboni	10
	Garbetta	43
	Debra	20
	Chunderkona	41
	Keshpore	26
	Ghattal	17
	Bhagwanpore	69
	Potaspore	52
	Egra	36
MIDNAPORE—contd.	Panchkura	14
	Tumlook	16
	Moisadal	9
	Nandigram	17
BANKURA.	Gungajalghatti	57
	Bankura	11
	Onda	12
	Bissenpur	19
	Kotalpore	13
	Indas	19
	Sonamukhi	19

272. SUBURBS OF CALCUTTA.—*Assistant Surgeon Jogendro Nath Bhuttacharjee, Deputy Superintendent.*—This officer's observations go to show that this Municipality is in a grossly insanitary condition; but as they do not materially differ from those furnished by Dr. Mullen, already submitted above, there is no need of repeating them here. It should, however, be recorded that from his report it appears that a new bustee called Kabidangah is being formed in thana Garden Reach, but that for its formation the people are digging earth, and thus creating excavations, which will in the future become cess-pools of stagnant water, containing decomposing animal and vegetable matter; that the Haripara bustee in Entally with its inefficient and exposed privies has been recently burnt down, and that it is hoped that in reconstructing it care will be taken to avoid the insanitary conditions which obtained in it; that the Goala bustees in Baliaghatta and Haldarbagan are simply pools of decomposing cowdung and straw, the drains and the excavations which have been made to receive them, being full to the brim, and that promiscuous defœcation is general for want of free public latrines. The Deputy Superintendent's inspections lead him to remark that "it is disgraceful, to say the least, that the Metropolis of British India should be surrounded by bustees whose sanitary condition is utterly neglected."

273. DARJILING CIRCLE.—*Dr. J. J. Wood, Deputy Sanitary Commissioner.*—This officer's sanitary inspections extended over 200 villages in the districts and thanas named in the margin. The following notes represent the principal observations made by him. *Roads.*—Many roads in the districts visited, especially those forming traffic lines, require to be planted with trees. *Water-supply.*—In addition to the usual sources of pollution, elephants, buffaloes, and other cattle are washed, bamboos steeped, and dead bodies of men and animals left in the tanks, bhils, and

District	Thana	Number
DARJILING.	Darjiling	16
	Kalimpong	3
	Kurseong	4
PURNEAH.	Kaliagunge	4
	Kissengunge	1
	Bulrampore	8
	Purneah	18
	Amour Kasba	6
	Kudwa	5
	Gondwara	3
	Manihari	4
DINAJPUR.	Mohadebpore	10
	Neetpur	7
DINAJPUR—concld.	Hemtabad	1
	Rajarampore	7
	Gungarampore	6
	Patiram	14
	Chintamon	14
	Parbatipur	7
	Nawabgunge	9
	Naipore or Patnitolla	14
MALDAH.	Maldah	6
	English Bazar	9
	Ratna	8
	Gazole	4
	Kaliachuck	4
	Shibgunge	2
	Nobabgunge	2
	Kharba	3
RAJSHAHYE.	Godagari	1
	Tanore	2
	Naugaon	3

rivers, and it was noticed that even the cleanest kept tanks were used for bathing, &c. *Disposal of the Dead.*—Burials in or close to houses and on the banks of tanks and rivers were observed to be common; and with regard to cremation, it was a rule to throw the ashes if the body is fully cremated, or the body if half cremated, into jhils, rivers, or tanks; but the people said that, excepting in the case of rivers, the water of the reservoirs thus contaminated is not drank. *General health.*—The general health of the circle is stated to have been much superior, as a rule, to ordinary years, fevers being less in the majority of the villages. *Advice offered.*—Besides instruction in the villages, Dr. Wood consulted with, and advised in sanitary matters, the native doctors whom he met, eliciting from them at the same time information relating to the villages.

274. *Moulvie Tujumul Hossein, Deputy Superintendent.*—This officer inspected 109 villages in the districts and thanas cited in the margin. The following facts taken from his notes may be given. *Site of villages.*—Many of the villages in the districts visited are situated on the banks of rivers, and generally villages are sparsely populated. *Water-supply.*—In the Dinajpur district some tanks are reserved for drinking purposes, and many wells protected by fencing. *Disposal of the Dead*—It was noticed that in many places, owing to the village sanitation rules having been enforced, and to the watchfulness of the police, the throwing of corpses into the rivers has ceased; and that nearly all the Mahomedans have special places for interring their dead.

District	Thana	Villages
Purneah.	Gondwara	2
	Purneah	1
	Kasba Amour	2
	Kisheugunge	4
Julpaiguri.	Silliguri	1
	Kairanti	1
	Patgram	2
	Dhupguri	1
	Alipur	2
	Salbari	1
	Boda	6
Dinagepur.	Pirgunge	4
	Birgunge	2
	Ranisankoil	4
	Thakurgaon	9
	Hemtabad	5
	Kaliagunge	6
	Bungshihari	6
	Gungarampore	9
	Patiram	6
	Nawabgunge	6
Maldah.	Maldah	3
	English Bazar	5
	Kaliachuck	7
	Ratua	3
	Patnitolla	7
	Kharba	4

275. *Assistant Surgeon Norendro Nath Gupta, Deputy Superintendent.*—This officer inspected 64 villages and 2 towns situated in the districts and thanas marginally named, and the following observations are taken from his report. *Population.*—Under this head it was noticed that the habits of the people in these districts are simple; that they are quite contented with poor diet, consisting of coarse rice, any sort of dâl, and some vegetables; that the men, as a rule, are averse to labour. *Water-supply.*—In Rajshahye the fishermen place large bamboo baskets filled with branches of trees, called *Kata*, in the rivers for catching fish, with the result that the water smells badly, and becomes muddy when the baskets are taken out. The impurity of this water is intensified when the rivers become stagnant during the hot months. *Advice tendered.*—Under this head it is observed that in all places the villagers assembled to hear eagerly the instructions given to them, but that they pleaded that, owing to poverty, they could not carry out the suggestions, and asked for Government aid in the matter. *Suggestions.*—The Deputy Superintendent states that some law framed on the same principles as those which apply to cultivable land is necessary to compel zemindars to give land to the villagers for burial-grounds and tanks, as the villagers say that they can dig tanks at their own expense, provided they are exempted from the exactions made by the zemindar for liberty to dig tanks.

District	Thana	Villages
Bogra.	Adamdighi	2
	Bogra	6
	Sharakandi	2
	Sibgunge	1
	Khetlal	3
	Badalgachi	2
	Panchbibi	2
	Sherpore	2
Rajshahye.	Nattore	6
	Lalpore	2
	Charghat	3
	Borigram	1
	Singra	1
	Manda	1
	Tanore	1
	Beauleah	4
	Baghmarah	1
	Naugaon	1
Rungpore.	Nishetgunge	2
	Mahigunge	2
	Kumargunge	1
	Jhaldaka	2
	Darwani	1
	Dimla	2
	Barabari	2
	Nageshwari	1
	Sundargunge	1
	Ulipore	1
	Malanga	1
	Pirgange	1
	Sadullapore	2
Faridpore.	Goalundo	5

276. RANCHI CIRCLE.—*Dr. L. A. Waddell, Deputy Sanitary Commissioner, Ranchi Circle*—Enquired into the sanitary condition of 281 villages situated in the districts and thanas named in the margin, and the following observations taken from his carefully drawn up and excellent report apply to these villages. *Lohardugga—Water-supply.*—The chief source of water-supply in this district is the "dari." The

In Lohardugga.	In Hazaribagh.	In Singbhum.	In Political Estates.
Choria.	Dumri.	Chuckurdhurpur.	Surguja: Jhilmilli.
Sisoi	Giridhi.	Chaibassa.	Surguja: Srinagar.
Chainpur.	Kharakdiha.	Kharsowan.	Korea: Patna.
Balumut.	Koderma.		Korea: Kargaon.
Tamar.	Barhi.		Korea: Asonad.
Lohardugga.	Ramgharh.		
Khunti.	Hazaribagh.		
Basia.			
Palkote.			
Kochedanga.			
Ranchi.			
Manika.			
Daltonganj.			
Patan.			

dari is essentially a natural spring and not the surface drainage collected in a hole dug in a rice field, or in the cavity formed by banking up a rice field, as explained in the last year's Report. At the point where the water issues from the spring an excavation is made by the villagers to allow of their filling their vessels. This shallow "dipping well," in contradistinction to a "drawing well" is usually brimful, for these springs are mostly perennial. Referring to the quality of this water, Dr. Waddell says:—"The association of daris with rice fields, although so common, is purely accidental, there being no necessary connection between the two. Rice is the staple crop throughout Lohardugga, and it is grown on each and every piece of ground where the moisture necessary for its growth can be obtained. As natural springs are common on the Lohardugga plateau, the moist tract of land lying below the spring is specially indicated for rice cultivation, and as a consequence not only this moist land below the spring, but (so as to utilize every inch of moist soil) the land immediately surrounding the dari is terraced into rice *khets*. The position of a dari in a rice field tract is thus characteristic. It is usually just within the margin of the terraced rice field tract; and below the dari stretches the terraced area of more or less sodden rice fields, dependent on the dari for their moisture. It will thus be seen that it is the dari with its outflowing moisture which determines the rice fields. The quality of dari water is, in most cases, extremely bad, from the practice of terracing the ground which includes the dari, and damming up the margins of the *khet* thus formed retards the outflow from the spring, and besides the water in the dari frequently becomes continuous with a small pool of water in the sodden field outside. Moreover, the shallowness of the well and its being brimful renders it liable to be frequented, and therefore polluted by cattle. To guard against this, the outer shell of the burned out trunk of a tree is frequently inserted into the well, so as to project several feet above the surface, and form in this way a wall. This, however, succeeds to a very imperfect extent in limiting the pollution of the water." There is another source of water-supply in Lohardugga called the "*Chimhi.*" This consists of a shallow excavation in the sandy bed of a small stream. The water percolating through the sand into this excavation is fairly good in quality, when, as frequently happens, the sand is comparatively free from organic impurity. In the Palamow sub-division the rivers and streams from which the water-supply is derived were found in an extremely insanitary condition. *Hazaribagh.*—In this district the water-supply, which is taken from kutcha wells, is very bad, particularly in the north and north-east, where opium is the principal crop grown. These wells, which exist in vast numbers in the neighbourhood of every village, and which are primarily constructed for irrigating the poppy crop, are highly contaminated by the manure, consisting of half rotten house-sweepings and refuse and cattle-droppings employed in the cultivation, owing to its being thickly strewn on the fields immediately around and between these wells, the soil being generally and highly porous. This so-called manure does not only pollute the water-supply in the fields, but it affects the health of the people, by being hoarded up in the immediate neighbourhood of their houses or against the house-wall, or in shallow excavations near the houses, and kept there till leisure permits of its removal to the fields, or till the quantity accumulates to such an extent as to demand removal. *Singbhum—Dwellings.*—It is gratifying to learn that the condition of the villages inhabited by the Larka Kols or Hos in this district is better, so far as they were seen by Dr. Waddell, than is generally the case. They present a remarkably clean appearance, due to the regularity with which the huts are built. These huts being made of spliced bamboo interlaced together, with roofs of thatch, allow of free ventilation, and altogether are not ill-adapted to the climate which is never very cold. On the whole, these villages are cleaner than those of the Uroans and Mundas inhabiting the Lohardugga plateau. *Disposal of the Dead.*—The practice of burying semi-cremated remains of the dead in the immediate vicinity of dwellings is universal, but the evils resulting from this practice is lessened by the fact that the fleshy parts of the body are mostly removed before burial, and that only a portion of the uncremated remains is selected for actual interment. *Water-supply.*—In this district the water-supply is taken from kutcha wells and daris and occasionally from streams and rivers, very rarely from tanks. It is limited in quantity during the greater part of the year in places away from the rivers. *Conservancy.*—The heaping up of

house-sweepings, refuse, &c., is also prevalent in this district; but the nuisance, although great, is less in degree than that referred to above as existing in the Hazaribagh district, as the Hos villages are smaller, and the fields in which the manure is spread are not wholly situated in the immediate neighbourhood of the houses. *General health* seemed on the whole fair. It was observed that in thana Tamar and Basia off the plateau in *Lohardugga* a considerable number of the people had malarial cachexia. In *Hazaribagh* the general health of the villagers was found to be below par, and as a class they appeared badly nourished. This, it is believed, is in some measure due to the impurity of the water they drink, and the tainted atmosphere in which they live from causes above explained. It was noticed that the Sonthals inhabiting jungle tracts near the Burrakur river and its tributaries were in bodily health much superior to the people who cultivate opium, living not far distant. In *Singbhum* numerous cases of itch among the children were met with, which Dr. Waddell thinks may, in some measure, be dependent on neglect of personal cleanliness, due to scarcity of water. *Recommendations.*—Under this head Dr. Waddell makes the following sensible suggestions which deserve consideration :—As little action is taken by the villagers on the suggestions of the Vaccination Department on matters relating to village sanitation, he is of opinion that "more practical good might be effected and solid advance made were the authorities to limit, for the present, their sanitary efforts to the securing to the people a *supply of pure drinking water.* This is the *prime sanitary necessity* for every village throughout the whole circle; and it is only to be supplied by authority acting from without the village communities. Good pucca wells ought to be constructed in every village on suitable sites; existing wells and tanks which are thoroughly bad should be filled up; and the remainder properly cleaned; and once a good drinking water-supply is obtained, thoroughly satisfactory arrangements must be made to conserve the water against pollution."

277. *Assistant Surgeon Prosonno Coomar Dey, Deputy Superintendent.*

District	Thana	Villages
MANBHUM.	Roghunathpur ...	3
	Bagmundi	1
	Ichagar	1
	Barabazar	2
	Nirsha	11
	Govindpur	7
	Topechanchi ...	18
	Chass	3
	Jhaldah	2
	Manbazar	1
	Gaurandih	1
	Purulia	1
SINGBHUM.	Chakerdharpur ...	2
	Khursuan	1
	Chyebassa	5
	Seraikela	1

This officer's sanitary inspections extended to only 60 villages in the districts and thanas named in the margin, 37 of which were inspected in company with me when I visited them on special duty, so that only 23 villages were made by him the subject of independent sanitary observation. I agree with Dr. Waddell, the Superintendent, that this is an insufficient number, considering that stringent orders were issued for more extensive inspections. *Roads.*—The village roads are said to have never undergone any repair; many are obstructed with heaps of cattle dung, and some are used as privies. This was notably the case in Nadiara, a part of the Raghunathpore union. *Water-supply.*—There are no good tanks in some of the chattis and villages on the Grand Trunk Road. The water-supply in villages Bagmundi, Mohal, and Adardir in Manbhum, and in 9 out of every 10 of the Kolhan villages is notoriously insufficient and bad. *Suggestions.*—That Rughunathpur and Jhalda should again be created Municipalities, as since their abolition as such the observance of all sanitary arrangements has ceased, and their sanitary condition is deteriorating; that the Police should be directed to prevent people from defœcating in the river bed in Bagmundi; and that the Mankis and Mundas of Kolhan should be induced to provide at least one good well in each village.

278. SONTHAL PERGUNNAHS CIRCLE.—*Assistant Surgeon Kashi Nath Ghosh, Deputy Sanitary Commissioner.*—This officer inspected 341 villages situated in the thanas and districts named in the margin, and the towns of Rajmehal, Sahibganj, Colgong and Deoghur. His report is exhaustive and indicates that he bestowed much attention on his sanitary inspections. His observations go to show that the insanitary conditions common

In Monghyr.	
Surajgurrah ...	1
Jamui	21
Sikandra	12
Shaikpura	15
Chakai	37
In Bhagulpore.	
Sultanganj	1
Soopole	25
Amurpur	61

In Sonthal Pergunnahs.	
Jamtara	1
Deoghur	9
Rajmehal ... / Jamui	77
Rajmehal	48
Mohespur... ...	38

to the villages in Bengal obtain also in the rural towns and villages visited by him; so to avoid repetition and lengthening this Report, I omit them, recording only a few of the most glaring defects on the one hand, and some redeeming points on the other. *Monghyr.*—In village Burhaye, in thana *Surajgurah*, the Mahomedans bury their dead in close proximity to their houses. In the rural town of *Jamui* many of the wells are pucca and surrounded by parapets, but they are used for all purposes; most part of the private privies are well-privies, but the few surface ones are regularly cleaned, and the night-soil removed to the adjacent fields, and the Mahomedan dead are interred in plots of waste land two miles distant from the town. In the rural town of *Sekundra* the greater number of the houses are used as shops. They are open only in the front facing the road, all the other sides being perfectly closed and air-tight; the whole town is devoid of the means of proper ventilation and perflation of air; the pauper dead are thrown into the rivulet Tukni, or buried in its sandy bed; but the water of this rivulet is said not to be used for drinking. The Mahomedans, however, bury their dead in a plot of waste land a mile from the town. The town of *Shaikpura* is pronounced to be the most insanitary and filthiest of towns in the district of Monghyr. Although a large town, its situation, the arrangement and construction of the houses, the nature of the pathways are such that all recommendations referring to sanitary reforms would be altogether useless, unless the town is thoroughly remodeled. The whole town is thickly populated and overcrowded, and conservancy is entirely absent, and there are no means for removing the sewage and refuse matter which are accumulated in the backyard of every house. It is drainless. The water drains from the adjacent hills and brings with it human excreta and all descriptions of filth. The wells which are the only source of water-supply are, for the most part, kutcha and unprotected, and their water is very filthy, and the water-supply is, moreover, insufficient. There are well-privies in many houses which are never cleaned. It has been observed that when cholera or small-pox breaks out any where in thana Shaikpura, it is sure to appear first in this town. The water of a tank in village *Kamasi*, in thana Shaikpura, is polluted by refuse from the tanneries of the resident Chamars, although it is used for drinking purposes. Most of the people of the villages in thana *Chakye* are unmindful of cleanliness, and are insufficiently clad, but the redeeming features among many other insanitary conditions are that the sweepings and house refuse, although accumulated in the courtyard, are burnt at intervals, and that the cattle are kept in temporary sheds in the winter, and under the shade of large trees in the summer. *Bhagulpore.*—In thana *Sultangunge*, in this district, the Hindus throw their dead into the river, and the Mahomedans bury theirs in its banks. In the *Bilbur* town the inhabitants appear to be in more or less easy circumstances, and their dwellings are for the most part mud-walled and tiled-roofed. Cholera raged in most of the villages in thana *Umerpore*, in epidemic form, from July to September, and was attributed to their insanitary condition. The drainage is defective, the water-supply bad and polluted, conservancy absent, the houses insufficient and ill-ventilated, and in most cases the people are destitute and insufficiently clad. In thana *Soopole* the houses are either mud-walled or fenced with a kind of reed called *foos*, and their floors are, as a rule, raised and free from dampness; but owing to the other sanitary arrangements being bad, cholera raged in it from October to December. *Sonthal Pergunnahs.*—In the villages of Debipur, Kandha, and Kupria, in *Deoghur* the well water, which is used for drinking purposes, is good, and the dead are burned or buried in the jungle near their neighbourhood. In the village of Gomala in *Jamtara* the houses are mud-walled, and their roofs thatched with straw, and some of them are well ventilated; and the drinking water taken from a tank is of good quality and not polluted in any way. In the villages in the *Rajmehal sub-division* and in thana *Mohespur*, the paddy-fields become sheets of water during the rains, but the water is gradually and completely drained away by the small rivulets which flow through them, so that the country is dry even before the cold weather sets in; but the people are, for the most part, indigent, insufficiently clad, and negligent of personal cleanliness, and cooking is carried on, and the sheep, pigs, and goats are located in the bed-rooms in most of the villages. The people in the villages of *Rajmehal Jabdi* appeared to be laborious,

cheerful and healthy. They subsist, irrespective of the ordinary grains, on a kind of wild corn which grows plentifully on the hills, and do not hesitate to eat the flesh of any dead animals. Wood from the jungles being plentiful, the dead are cremated completely. The sanitary condition of the four towns visited by the Deputy Sanitary Commissioner is reported to be bad, that of Rajmehal being the worst, without hardly one redeeming feature; but in Deoghur the natural drainage is excellent, so much so that its remarkable healthiness is attributed to it; most part of the houses are brick built, but crowded together and ill-ventilated; one of the tanks has been set apart exclusively for drinking purposes, and some of the wells are reported to contain pure and wholesome water, and the conservancy arrangements are fair. *Registration.*—The Deputy Sanitary Commissioner reports that the verification of death registration in the villages of his circle is very difficult. The people, besides being ignorant, are unwilling to afford information, as the village chowkidar is in the way, and it is particularly in the presence of the chowkidars that the punchayets hesitate to give information. Moreover, his subordinates, even if they find any discrepancies, are reticent in reporting them for fear of incurring the displeasure of the police, and hence they take no interest in the matter, and perform this duty in an evasive and perfunctory manner. He had reason to believe that on several occasions the reports they made were simply copies of the thana register. He therefore directed them to report only such deaths as were not reported at the thana by the chowkidars, but the order does not appear to have been generally obeyed. *Suggestions.*—Of the recommendations made by the Deputy Sanitary Commissioner, the following deserve consideration. Reservation and protection from pollution of the sources from which drinking water is taken; setting apart waste lands for defæcation; selecting plots of land and fixing them solely as burial-grounds; and converting the Shaikpura town into a Municipality.

279. BEHAR CIRCLE.—*Assistant Surgeon Mothura Nath Sen, Deputy Sanitary Commissioner.*—This officer's sanitary inspections embraced 440 villages situated in the districts and thanas named in the margin. The chief of the observations made by him were the following: —*Houses.*—Overcrowding of inmates in houses at night is general, but their mud floors are dry, excepting in the rainy season. The cattle sheds, although close to the dwelling-houses, are daily cleaned. *Roads.*—In the Patna district many roads have been constructed by the Road Cess Department, so that all the police stations are connected with one another, and in the Dinapore sub-division many fair-weather roads have been provided connecting one village with another. Trees have been planted on the sides of some of these roads, but they have died off. Trees on the metalled roads in Shahabad are, however, thriving well. *Water-supply.*—Well water is used every where, except in some villages which are situated on the banks of the rivers Ganges and Sone. Tanks are comparatively few in number, and their water is never drank. The wells are situated on high ground and protected from inward drainage, but their water is not above suspicion. *Conservancy.*—In these districts cowdung is dried and extensively used as fuel. In the outskirts of Futwabazar a few of Major Ramsay's portable latrines have been placed, but they are not generally used. Most of the private privies in the villages are sundasses or well-privies. In every village there are pits or holes in which water stagnates almost all the year round. *Disposal of the Dead.*—Interments and cremation generally take place at a safe distance from the village boundaries. *General health.*—The general health of the circle was, on the whole, good, but in the Shahabad district fever prevailed with unusual severity. All the thanas suffered to a more or less extent from its effects, and in the low-lying tracts it is believed that scarcely any person escaped it. The greatest suffering from the disease was experienced during the months of September and October. From the beginning of November, however, fresh attacks were few, but relapses, attended with the usual complications, were frequent. *Registration.*—It was noticed that the chowkidars when they come to know that enquiries regarding deaths have been made in their villages

In Shahabad.	*In Shahabad*—concld.	*In Patna*—concld.
Arrah.	Kargher.	Futwa.
Pelowti.	Sasseram.	Hilsa.
Dumraon.	Mohania.	Chandi.
Buxar.	Bhabuah.	Behar.
Peroo.	*In Patna.*	Silao.
Dhangain.	Manair.	Masaudhi.
Dehri.	Baukipore.	Bikram.

by the officers of the Vaccination Department generally register the omitted death after the enquiry, and in some case hide the information in such a way that it takes much time and trouble to bring it into light. To check these malpractices, the Deputy Sanitary Commissioner advocates the introduction of the *hath chitti* or memorandum book system throughout the districts. *Recommendations.*—Under this head may be cited the following. To limit defæcation to the fields outside the villages, and to set apart one or two wells in each village solely for drinking water.

280. ORISSA CIRCLE.—*Apothecary P. Veriah Naidu, Deputy Sanitary Commissioner.*—Visited for sanitary inspections, 1,155 villages situated in the districts and thanas marginally named. His report deals with the chief of these villages, and while disclosing the existence in them of the insanitary conditions common to all villages, notes the following redeeming features exhibited. The soil is good, the houses are kept clean and are mud-walled with free ventilation, accommodation is sufficient, food and water-supply plentiful, and general sanitary state good. In addition, the following conditions are peculiar to the villages named. In Palirampore, in thana *Kendrapara*, refuse and cattle dung are thrown, and the dead interred and cremated outside the village far from the sources of drinking water. The latter procedure is also observed in Gopalpore and Palaspore in thana *Kendrapara*, in Shahabad in *Jagatsingpore*, in Nursingpore, in Tirtol, in Mungulpur in *Dharmsala*, in Locknathpore in *Jajpore*, in Jaha, Bhimrajpur and Muttasai in *Cuttack*, and in Gobindpore in *Salipore*, and the former process in Issurpur in *Cuttack* and Bulrampur in *Salipore*. Dondapa in *Patamundi* is surrounded by swamps, and the houses in it are ill-ventilated. In Kussipore, in the same thana, the houses are kept very dirty, and personal cleanliness is much neglected. In Pamda in *Tirtol* refuse and cowdung heaps are to be met with at every door, and in Meaneyjunga, in the same thana, and in Hajarapatana in *Cuttack* the houses are very filthy and the sanitary condition very bad. In Jobra in *Cuttack* the habits of the people are uncleanly. In Nuahat in *Cuttack* cowdung is heaped in front of houses. In Karimpur in the same thana, in Govindpur and Bulrampur in *Salipur*, and in Polaspur in *Kendrapara*, sewage and house refuse are thrown in the backyards of houses. In Jamadaipur in Cuttack the food and water-supply are insufficient. In the villages of Nuahat Bazar, Bhowpur, and Hajarapatana in *Cuttack*, in Julishurpur in *Patamundi*, in Shabad in Jagatsingpur, and in Painda and Surjet in Tirtol, suggestions for the improvement of insanitary conditions were made to the people or to the headmen of the villages, and they are said to have been "at once remedied." *General health* was good on the whole; but in the village of Dondapore in *Patamundi* fever prevails to a great extent in September and October, "due to malaria;" in the Juldhurpur village in Aul in the winter months due to climatic causes; and in the village of Horidapol in *Dharmsala* during the rainy months due to stagnant khals."

In Cuttack.	
Cuttack town	7
Cuttack thana	133
Salipur "	195
Kondrapara "	241
Patamundi "	134
Aul "	129
Jagatsingpur "	180
Tirtol "	129
In Balasore.	
Bhudrack	7

The Deputy Sanitary Commissioner also visited the thanas of Kendrapara, Patamundi, Aul, Jajpur, and Dharmsala in Cuttack, to enquire into the damage which was caused in these thanas by the cyclone and storm-wave which occurred in September. A brief account of this calamity has been furnished in paragraph 38 of this Report. From Mr. Naidu's observations it appears that 5,570 villages were affected; 166 villages almost or entirely swept away with their inhabitants; several thousands of trees and bamboo bushes were uprooted; large quantities of paddy, rice, and other edibles were destroyed or damaged, and much destruction or damage done to property. The ascertained loss of human lives amounted to 2,342, and of cattle to 13,003; but he estimates that over 10,000 of the former and 15,000 of the latter perished.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

The 28th June 1886.

APPENDIX No. I.

VITAL STATISTICS OF THE DISTRICTS IN BENGAL

FOR THE YEAR 1885.

Annual Form No. I.—BIRTHS *registered in the principal Municipalities and Towns in the Districts of the Bengal Province during the year* 1885.

1	2	3	4	5			6			7	8	9
Districts.	Number.	Municipalities and Towns.	Population according to Census of 1881.	Number of Births registered.			Ratio of Births per 1,000 of Population.			Number of males born to every 100 females born.	Excess of Births over Deaths per 1,000 of Population.	Excess of Deaths over Births per 1,000 of Population.
				Male.	Female.	Total.	Male.	Female.	Total.			
Burdwan	1	Burdwan	34,080	491	445	936	14·41	13·05	27·46	110	......	14·00
Bankura	2	Bankura	18,717	258	274	532	13·76	14·61	28·37	94	2·06	... .
	3	Bishenpur	21,283	285	283	568	13·39	13·29	26·68	100	4·08	... ..
Midnapore	4	Midnapore	33,560	314	297	611	9·35	8·85	18·20	105	......	7·51
Hughli	5	Hughli and Chinsurah	38,718	460	388	848	11·88	10·02	21·90	118	.....	12·27
	6	Serampore	26,496	398	352	750	15·02	13·28	28·30	113	.....	7·06
	7	Utterpara	5,510	63	52	115	11·43	9·43	20·87	121	......	7·14
Howrah	8	Howrah	90,813	1,178	956	2,134	12·97	10·52	23·49	123	.....	3·34
	9	Balli	14,815	184	152	336	12·41	10·25	22·66	121	... ..	·50
24-Pergunnahs	10	Suburbs of Calcutta	251,439	2,734	2,374	5,108	10·87	9·44	20·31	115	.....	24·50
	11	Bussirhat	20,450	173	148	321	8·45	7·23	15·69	116	......	2·20
Nuddea	12	Kishnaghur	27,477	272	224	496	9·89	8·15	18·05	121	... .	8·26
	13	Santipore	29,687	181	148	329	6·09	4·98	11·08	122	......	2·19
	14	Ranaghat	8,683	35	34	69	4·03	3·91	7·94	102	.....	·63
Jessore	15	Jessore	8,495	79	44	123	9·29	5·17	14·47	179	.	20·60
Rajshahye	16	Beauleah	19,791	234	208	442	11·82	10·50	22·33	112	... .	0·09
Darjiling	17	Darjiling	7,076	32	10	72	4·01	5·01	9·02	80	. .	4·14
Dacca	18	Dacca	80,161	733	630	1,363	9·14	7·85	17·00	116	......	15·29
Faridpore	19	Faridpore	10,263	47	37	84	4·57	3·60	8·18	127	......	14·12
Mymensing	20	Jamalpore	16,091	249	223	472	15·47	13·85	29·33	111	1·91	...
Chittagong	21	Chittagong	22,130	308	255	563	13·91	11·52	25·44	120	.... .	6·71
Tipperah	22	Comillah	13,506	213	186	399	15·77	13·77	29·54	114	8·89	......
	23	Brahmanberiah	17,543	335	329	664	19·09	18·75	37·84	101	12·08	.....
Patna	24	Patna	160,237	2,843	2,434	5,277	17·74	15·18	32·93	116	28·74	*
	25	Behar	48,971	539	441	980	11·00	9·00	20·01	122	·45	... ..
	26	Barrh	23,610	238	222	460	10·08	9·40	19·48	107	......	37·02
	27	Mokamah	13,722	190	191	381	13·84	13·91	27·76	99	2·10	......
Gya	28	Gya	76,121	1,337	1,260	2,597	17·56	16·55	34·11	106	. .	15·24
Shahabad	29	Arrah	43,465	380	348	728	8·74	8·00	16·74	109	... ..	2·03
Mozufferpore	30	Mozufferpore	42,742	576	411	987	13·47	9·61	23·09	140	......	11·39
	31	Sitamurhi	6,125	124	87	211	20·24	14·20	34·44	142	......	23·68
Durbhanga	32	Durbhanga	66,096	1,133	1,010	2,143	17·14	15·28	32·42	112	......	4·91
Sarun	33	Chupra	53,243	658	524	1,182	12·35	9·84	22·19	125	......	6·91
	34	Revilgunge	12,493	236	239	466	18·89	18·11	37·30	102	......	2·64
Chumparun	35	Bettiah	21,263	458	356	814	21·54	16·74	38·28	128	·52	......
Monghyr	36	Monghyr	57,520	732	668	1,400	12·72	11·60	24·33	109	.....	10·11
	37	Jamalpore	13,563	385	337	722	28·38	24·84	53·23	114	......	4·79
	38	Shaikpura	12,517	221	230	451	17·65	18·37	36·03	96	......	7·91
Bhagulpore	39	Bhagulpore	57,453	1,214	1,108	2,322	21·13	19·28	40·41	109	.....	6·34
Purneah	40	Purneah	15,016	156	150	306	10·38	9·98	20·37	104	.....	18·52
Cuttack	41	Cuttack	43,239	410	379	789	9·48	8·76	18·28	108	......	3·69
	42	Kendrapara	15,697	305	244	549	19·43	15·54	34·97	125	7·33	... ..
	43	Jajpur	11,233	89	64	153	7·92	5·69	13·62	139	......	17·88
Poori	44	Poori	24,784	189	183	372	7·62	7·38	15·00	103	... ..	49·84
Lohardugga	45	Ranchi	18,143	162	142	304	8·78	7·69	16·48	114	... ...	4·17
Manbhum	46	Purulia	9,304	102	102	204	10·96	10·96	21·92	100	......	9·5
		Grand Total ...	1,664,577	21,933	19,200	41,133	13·17	11·53	24·71	114	... ..	6·99

* The deaths in the Patna town cannot be ascertained this year, as they have been amalgamated with the deaths of the rural area.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Office of the Sany. Commr. for Bengal,
The 19th March 1886.

ANNUAL FORM. No. II.—*Deaths registered in the* **DISTRICTS** *of the Bengal Province during the year* **1885.**

1	2	3	4	5	6			7	8			9		
Number.	DISTRICTS.	Population according to Census of 1881.	Area in square miles.	Average Population per square mile.	NUMBER OF DEATHS REGISTERED.			Number of males died to every 100 deaths of females.	RATIO OF DEATHS PER 1,000 OF POPULATION.			MEAN RATIO OF DEATHS PER 1,000 DURING PREVIOUS FIVE YEARS.		
					Male.	Female.	Total.		Male.	Female.	Total.	Male.	Female.	Total.
	Burdwan Division.													
1	Burdwan	1,391,823	2,697	516·06	19,165	16,361	35,526	117	28·67	23·61	25·52	30·10	25·24	27·57
2	Sankura	1,041,752	2,621	397·46	10,277	8,666	18,943	118	20·26	16·20	18·18	23·84	20·65	22·21
3	Birbhum	704,428	1,756	452·40	11,608	10,880	22,488	106	30·42	26·35	28·30	30·28	26·32	28·22
4	Midnapore	2,515,565	*5,082	494·99	26,981	24,343	51,324	110	21·70	19·13	20·40	21·79	18·16	19·95
5	Hughli	663,050	*880	753·46	8,379	8,012	16,391	104	26·54	23·06	24·72	23·58	19·80	21·00
6	Serampore	351,955	343	1026·11	3,965	3,534	7,499	112	22·73	19·89	21·30	20·13	16·53	18·31
	Total of Hughli including Serampore ...	1,015,005	1,223	820·93	12,344	11,546	23,890	106	25·19	21·99	23·53	22·35	18·70	20·46
7	Howrah	635,381	476	1334·83	7,298	6,294	13,592	115	23·05	19·73	21·30	19·69	15·59	17·63
	Presidency Division.													
8	24-Pergunnahs, exclusive of suburbs of Calcutta.	1,018,420	2,097	771·78	17,208	14,495	31,703	118	20·77	18·34	19·58	22·54	18·45	20·54
	Suburbs of Calcutta ...	251,430	23	10,932·13	6,559	4,708	11,267	139	44·55	45·16	44·81	45·80	45·34	45·64
	Total of 24-Pergunnahs	1,869,850	2,120	882·00	23,767	19,203	42,970	123	24·36	21·46	22·98	26·06	21·58	23·92
9	Nuddea	1,655,721	2,755	600·98	31,666	25,879	57,545	122	39·29	30·44	34·75	47·12	37·46	42·16
10	Jessore	1,939,375	2,925	663·03	27,019	22,936	49,955	117	28·16	23·40	25·75	27·72	22·27	24·97
11	Murshidabad	1,226,790	2,141	572·20	16,337	13,356	29,693	122	27·85	20·84	24·20	30·70	22·95	26·85
12	Khulna	1,079,948	2,077	519·96	12,968	12,195	25,163	106	22·81	23·83	23·30	23·64	22·96	23·32
	Rajshahye Division.													
13	Dinajpur	1,514,346	4,118	367·74	18,698	13,536	32,234	138	23·90	18·49	21·28	21·38	16·72	19·13
14	Rajshahye	1,338,638	2,361	566·98	23,144	18,597	41,741	124	35·05	27·41	31·18	33·91	27·21	30·51
15	Rungpore	2,097,964	3,486	601·83	29,461	24,193	53,654	121	27·59	23·48	25·57	17·46	14·24	15·87
16	Bogra	734,358	1,498	490·23	10,989	9,372	20,361	117	29·18	25·91	27·72	23·51	20·23	21·89
17	Pubna	1,311,728	1,847	710·19	21,083	17,154	38,237	122	32·51	25·85	29·15	22·53	18·38	20·44
18	Darjiling	156,137	1,234	126·53	1,681	1,128	2,809	149	18·80	16·92	17·90	9·30	7·49	8·39
19	Julpaiguri	581,562	2,884	201·65	8,279	6,837	15,116	121	27·09	24·77	25·99	17·74	15·30	16·58
	Dacca Division.													
20	Dacca	2,116,350	2,797	756·65	22,747	19,694	42,441	115	22·00	18·19	20·05	21·20	17·13	19·12
21	Faridpore	1,631,744	2,267	719·78	13,677	11,802	25,479	115	16·96	14·29	15·61	15·12	11·65	13·37
22	Backergunge	1,900,889	3,649	520·93	24,649	22,367	46,016	105	24·29	24·11	24·20	22·68	20·36	21·55
23	Mymensing	3,051,966	6,287	485·41	24,481	19,515	43,996	130	15·74	13·02	14·41	10·01	7·81	8·60
	Chittagong Division.													
24	Chittagong	1,132,341	2,567	441·11	11,087	10,326	21,413	107	20·85	17·19	18·91	19·61	12·00	16·03
25	Noakholli	820,772	1,641	500·17	8,821	8,857	17,678	99	21·24	21·84	21·53	20·33	17·91	19·13
26	Tipperah	1,519,338	2,491	609·93	14,705	12,362	27,067	118	19·07	16·51	17·81	14·08	11·54	12·83
	Patna Division.													
27	Patna	1,756,856	2,079	845·05	23,540	21,841	45,381	107	27·41	24·31	25·83	27·67	23·52	25·55
28	Gya	2,124,682	4,712	450·91	28,342	26,109	54,541	108	27·16	24·23	25·67	20·83	17·95	19·36
29	Shahabad	1,964,909	4,365	450·15	25,864	24,494	50,358	105	27·21	24·14	25·62	17·06	13·15	15·04
30	Mozufferpore ...	2,582,060	3,003	859·83	28,373	22,242	50,595	127	22·41	16·84	19·59	16·12	11·82	13·93
31	Durbhanga	2,633,447	3,336	789·64	25,832	21,618	47,450	119	19·93	16·16	18·01	14·16	10·76	12·43
32	Sarun	2,280,382	2,622	869·71	27,972	22,183	50,155	126	25·81	18·53	21·99	18·78	12·86	15·67
33	Chumparun	1,721,608	3,531	487·57	21,558	17,747	39,305	121	24·76	20·85	22·83	15·54	11·81	13·70
	Bhagulpore Division													
34	Monghyr	1,969,774	3,921	502·37	33,433	30,122	63,555	110	34·49	30·10	32·26	14·83	11·84	13·31
35	Bhagulpore . ..	1,966,158	4,268	460·67	32,411	28,636	61,047	113	33·10	29·01	31·04	18·53	15·09	16·80
36	Purneah	1,848,687	4,956	373·02	22,160	17,985	40,145	123	23·64	19·72	21·71	19·99	16·12	18·08
37	Maldah	710,448	1,891	375·70	10,015	7,951	17,966	125	28·86	21·87	25·28	22·13	15·95	18·97
38	Sonthal Pergunnahs ...	1,568,093	5,456	287·41	16,113	12,770	28,883	126	20·51	16·31	18·41	13·24	10·37	11·81
	Orissa Division.													
39	Cuttack	1,795,065	3,633	494·09	21,067	20,550	41,617	102	24·00	22·40	23·18	21·43	18·30	19·71
40	Poori	888,487	2,473	359·27	10,774	9,867	20,641	109	24·12	22·32	23·23	22·76	20·77	21·77
41	Balasore	945,280	2,066	457·54	10,916	10,181	21,097	107	23·65	21·04	22·31	25·09	21·48	23·25
	Chota Nagpore Division.													
42	Hazaribagh	1,104,742	7,021	157·35	12,796	11,195	23,991	116	23·48	19·09	21·71	17·57	14·78	16·16
43	Lohardugga	1,609,244	12,045	133·60	13,677	12, 16	25,693	113	17·16	14·78	15·96	18·29	15·07	16·66
44	Singbhum ...	561,964	4,336	129·60	4,498	3,556	8,054	126	16·00	12·65	14·33	15·84	13·00	14·49
45	Manbhum ...	1,058,228	4,147	255·18	8,105	6,835	14,940	118	15·42	12·82	14·11	14·41	11·44	12·91
	TOTAL FOR THE PROVINCE	66,163,884	144,803	456·73	809,378	695,367	1,504,745	116	24·65	20·86	22·74	20·50	16·71	18·59

* A village was transferred from Midnapore to Hughli, but as its area in square miles is not known, those figures cannot be altered so as to indicate the reduction and increase respectively caused by the transfer.

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19th March 1886.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM NO. III.—*Deaths registered in the Districts of the Bengal Province during* **EACH MONTH** *of the year* 1885.

1	2	3												4
Number.	DISTRICTS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	TOTAL DEATHS REGISTERED DURING THE YEAR.
	Burdwan Division.													
1	Burdwan	2,733	2,589	3,643	3,477	4,214	3,387	2,406	2,568	2,747	2,752	2,662	2,348	35,526
2	Bankura	1,276	1,241	1,680	1,844	1,763	1,637	1,542	1,658	1,796	1,562	1,451	1,491	18,943
3	Birbhum	1,641	1,475	1,597	1,727	2,483	2,391	2,034	2,519	2,047	1,599	1,416	1,259	22,489
4	Midnapore	4,738	4,360	4,339	3,876	3,632	3,379	3,570	3,973	4,579	4,616	5,066	5,196	51,324
5	Hughli	1,487	1,333	1,665	1,304	1,052	931	858	1,105	1,916	1,677	1,496	1,567	16,391
6	Serampore	626	680	746	611	466	400	427	584	650	599	809	901	7,499
	Total of Hughli, including Serampore	2,113	2,013	2,411	1,915	1,518	1,331	1,285	1,689	2,566	2,276	2,305	2,468	23,890
7	Howrah	1,425	1,223	1,423	1,056	917	756	779	936	1,128	1,267	1,319	1,363	13,592
	Presidency Division.													
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	3,817	2,849	3,221	2,718	1,887	1,641	1,812	2,254	2,425	2,448	2,895	3,736	31,703
	Suburbs of Calcutta	1,080	828	1,083	1,055	789	664	814	778	852	890	1,109	1,325	11,267
	Total of 24-Pergunnahs ...	4,897	3,677	4,304	3,773	2,676	2,305	2,626	3,032	3,277	3,338	4,004	5,061	42,970
9	Nuddea	4,084	3,919	6,597	6,343	4,477	4,005	3,091	3,734	4,655	5,275	6,151	5,184	57,545
10	Jessore	5,283	3,805	4,645	4,172	3,800	2,421	2,579	3,100	3,164	4,575	5,993	6,558	49,053
11	Murshidabad	2,164	2,021	2,262	2,818	2,458	1,993	2,339	2,428	2,698	3,446	2,913	2,203	29,693
12	Khulna	2,728	1,951	2,102	2,182	1,706	1,292	1,430	1,610	1,985	2,147	2,875	3,155	25,163
	Rajshahye Division.													
13	Dinajpur	2,660	2,442	2,626	2,650	2,801	2,024	2,093	2,220	2,447	2,693	3,289	4,289	32,234
14	Rajshahye	3,707	2,945	3,488	5,411	6,748	3,463	2,370	2,599	2,154	2,426	3,530	2,900	41,741
15	Rungpore	3,410	2,090	3,168	2,922	2,821	2,736	3,099	3,692	5,170	5,596	9,256	8,704	53,654
16	Bogra	1,817	1,517	2,205	3,187	1,668	1,151	1,331	1,383	1,185	1,353	1,643	1,941	20,361
17	Pubna	3,586	2,706	3,116	4,656	3,712	2,357	2,122	2,023	2,431	2,870	3,922	4,736	38,237
18	Darjiling	221	160	190	108	252	258	316	298	270	225	230	191	2,809
19	Julpaiguri	1,213	1,153	1,118	958	1,242	1,201	1,277	1,117	1,012	1,218	1,726	1,881	15,116
	Dacca Division.													
20	Dacca	3,995	2,764	3,122	3,890	3,346	2,427	2,208	2,264	2,669	3,518	5,132	7,176	42,441
21	Faridpore	2,462	1,715	1,988	2,925	1,942	1,377	1,172	1,261	1,592	1,861	3,328	4,026	25,479
22	Backergunge	4,561	3,366	3,919	3,905	4,429	2,881	2,644	2,640	3,020	3,491	4,957	6,113	46,016
23	Mymensing	3,651	2,944	2,696	3,745	4,110	3,217	3,163	3,364	3,237	3,607	4,590	5,672	43,996
	Chittagong Division.													
24	Chittagong	1,928	1,616	1,577	1,554	1,965	1,797	2,278	2,069	1,664	1,682	1,615	1,668	21,413
25	Noakhally	1,736	1,632	1,908	1,563	1,577	1,125	1,119	1,153	1,105	1,182	1,562	2,008	17,678
26	Tipperah	2,715	2,136	2,182	2,101	2,106	1,602	1,675	1,788	2,023	2,258	2,714	3,767	27,067
	Patna Division.													
27	Patna	2,315	2,163	2,976	3,063	3,056	2,842	3,612	6,667	5,808	4,974	5,110	2,705	45,381
28	Gya	2,534	2,789	3,321	3,049	2,816	3,356	4,538	7,084	7,051	7,116	6,161	4,426	54,541
29	Shahabad	1,943	1,746	2,151	2,608	2,600	3,091	3,063	4,768	6,472	8,589	8,334	4,938	50,378
30	Mozufferpore	2,562	2,218	3,039	2,904	2,849	3,003	3,564	7,502	8,743	7,118	4,335	2,758	50,595
31	Durbhanga	2,056	2,308	2,841	2,018	3,084	4,023	3,603	4,910	5,574	7,185	5,524	3,455	47,450
32	Sarun	2,598	2,650	3,245	3,779	3,518	3,350	4,130	6,433	6,772	5,668	4,417	3,568	50,155
33	Chumparun	2,104	1,850	2,583	2,610	3,058	2,574	2,663	5,534	6,124	3,812	5,804	2,650	39,305
	Bhagulpore Division.													
34	Monghyr	2,507	2,621	4,144	3,433	2,802	3,961	5,110	8,442	8,913	8,380	8,982	4,860	63,555
35	Bhagulpore	2,824	2,626	3,601	3,576	3,447	3,496	4,171	6,646	7,393	9,064	8,390	5,713	61,047
36	Purneah	3,206	2,954	3,270	2,863	2,809	2,431	2,246	2,391	2,707	4,455	6,319	4,474	40,145
37	Maldah	1,398	1,009	1,267	2,261	2,404	1,413	1,085	918	1,188	1,852	1,733	1,438	17,946
38	Sonthal Pergunnahs	1,262	1,231	1,388	1,306	1,754	1,768	2,821	4,992	4,249	3,290	2,589	2,233	28,883
	Orissa Division.													
39	Cuttack	3,232	4,067	4,495	3,160	3,006	2,184	2,415	3,108	3,021	3,440	5,119	4,370	41,617
40	Pooree	1,960	2,436	1,985	1,411	1,316	1,180	2,350	1,850	1,250	1,185	1,577	2,131	20,641
41	Balasore	1,630	1,500	1,706	1,737	1,467	1,494	1,486	1,704	1,723	1,768	2,237	2,645	21,097
	Chota Nagpore Division.													
42	Hazaribagh	1,165	1,081	1,339	1,249	1,621	2,236	2,234	3,312	2,985	2,411	2,346	2,012	23,991
43	Lohardugga	1,455	1,522	1,933	1,715	1,687	1,828	2,041	2,816	3,232	2,890	2,143	2,161	25,693
44	Singbhum	634	581	666	719	577	679	695	645	758	664	677	758	8,054
45	Manbhum	705	722	1,003	1,151	1,765	1,744	1,402	1,563	1,608	1,091	1,078	1,108	14,940
	TOTAL FOR THE PROVINCE ...	108,764	96,481	115,160	118,293	114,119	99,475	103,808	136,383	140,092	152,685	164,246	149,249	1,504,745
	RATIO OF DEATHS PER 1,000 OF POPULATION IN EACH MONTH.	1·64	1·45	1·74	1·78	1·72	1·50	1·56	2·06	2·20	2·31	2·48	2·25	22·74

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19th March 1886.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. IV.—*Deaths registered according to* **AGE** *in the Districts of the Bengal Province during the year* 1885.

1	2	3		4		5		6		7		8		9		10		11		12	
Number.	Districts.	Under 1 year.		1 and under 5 years.		5 and under 10 years.		10 and under 15 years.		15 and under 20 years.		20 and under 30 years.		30 and under 40 years.		40 and under 50 years.		50 and under 60 years.		60 years and upwards.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
	Burdwan Division.																				
1	Burdwan	2,297	1,770	1,131	1,014	1,246	1,048	1,078	697	1,262	1,331	3,159	2,019	2,932	2,210	2,570	1,833	1,483	1,313	2,009	2,228
2	Bankura	1,196	1,188	835	780	729	560	563	368	617	586	1,460	1,286	1,294	913	1,210	842	848	803	1,225	1,340
3	Birbhum	1,738	1,413	956	906	852	754	606	472	648	765	1,532	1,676	1,570	1,413	1,191	1,100	1,077	1,024	1,138	1,207
4	Midnapore	3,816	3,291	2,514	2,480	1,818	1,475	1,241	878	1,393	1,343	3,194	3,126	3,306	2,823	3,118	2,283	2,540	2,290	3,921	4,851
5	Hughli	1,012	724	717	665	558	494	384	311	480	607	1,232	1,337	1,205	1,049	1,095	928	801	799	895	1,098
6	Serampore	582	438	465	448	258	251	157	121	167	170	489	530	468	337	465	340	350	304	555	586
	Total of Hughli, including Serampore	1,594	1,162	1,182	1,113	816	745	541	432	647	777	1,721	1,876	1,673	1,386	1,560	1,268	1,160	1,103	1,450	1,684
7	Howrah	1,189	887	1,029	951	516	455	301	207	337	336	705	758	719	525	728	502	595	464	1,089	1,200
	Presidency Division.																				
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	1,971	1,154	2,091	1,989	1,739	1,368	1,062	651	927	1,043	2,005	1,965	1,873	1,388	1,633	1,160	1,339	1,215	2,568	2,253
	Suburbs of Calcutta	1,076	877	680	585	256	229	203	123	340	263	1,214	695	1,061	527	660	348	509	370	551	691
	Total of 24-Pergunnahs	3,047	2,331	2,771	2,574	1,995	1,597	1,265	774	1,276	1,306	3,219	2,660	2,934	1,915	2,293	1,517	1,848	1,585	3,119	2,944
9	Nuddea	3,152	2,550	4,473	4,190	4,747	3,548	3,958	1,818	2,034	1,600	3,245	3,008	2,973	2,171	2,707	1,814	1,921	1,688	3,150	3,433
10	Jessore	1,516	1,398	3,081	2,863	3,278	2,371	1,977	1,333	1,530	1,692	3,194	3,186	3,224	2,595	3,114	2,274	2,529	2,119	3,546	3,247
11	Murshidabad	1,622	1,217	1,998	1,747	1,745	1,282	1,289	706	1,020	828	2,180	1,745	1,995	1,407	1,643	1,933	1,213	1,205	1,602	1,098
12	Khulna	1,936	1,586	1,851	1,651	1,218	828	503	486	611	923	1,216	1,857	1,326	1,269	1,275	970	1,070	951	1,890	1,674
	Rajshahye Division.																				
13	Dinajpur	1,563	1,063	1,300	1,188	1,320	934	1,276	728	1,117	1,079	2,882	2,569	3,473	2,116	2,591	1,610	1,762	1,137	1,614	1,218
14	Rajshahye	857	700	2,336	2,311	2,058	2,012	1,857	1,107	1,545	1,518	3,802	3,414	3,891	2,808	2,747	1,983	1,415	1,150	1,734	1,523
15	Rungpore	2,39[illegible]	2,199	2,897	2,563	2,173	1,494	1,467	938	1,286	1,532	3,883	4,040	4,542	3,479	3,932	2,717	2,022	1,942	3,643	2,999
16	Bogra	1,087	814	1,201	1,260	1,008	742	700	399	570	723	1,503	1,545	1,632	1,217	1,297	917	840	720	1,147	1,035
17	Pubna	1,244	975	3,248	3,056	2,931	2,040	1,600	978	1,013	996	2,286	2,123	2,440	1,800	2,214	1,498	1,024	1,219	2,483	2,469
18	Darjiling	149	111	226	210	116	90	94	71	119	80	347	210	250	112	154	83	118	82	108	79
19	Julpaiguri	1,117	1,228	796	677	437	329	420	294	436	512	891	884	1,150	853	1,008	733	982	727	742	600
	Dacca Division.																				
20	Dacca	3,276	2,628	3,619	3,132	2,179	1,641	1,330	868	910	1,156	1,921	2,318	2,291	1,919	2,087	1,438	1,561	1,070	3,570	3,524
21	Faridpore	1,069	751	1,712	1,649	1,337	976	783	551	650	850	1,424	1,076	1,796	1,481	1,640	1,110	1,273	1,024	1,963	1,731
22	Backergunge	5,604	1,586	3,685	3,415	2,062	1,595	935	651	601	1,080	1,492	2,834	1,909	2,034	1,767	1,368	1,823	1,451	3,771	3,353
23	Mymensing	2,11[illegible]	1,716	2,68[illegible]	2,650	1,993	1,139	1,308	957	1,248	1,552	3,120	3,089	3,333	2,278	2,903	1,603	1,894	1,300	3,848	3,051
	Chittagong Division.																				
24	Chittagong	1,059	788	1,290	1,216	862	732	631	410	580	698	1,204	1,503	1,378	1,242	1,209	957	969	789	1,799	1,968
25	Noakhalli	2,007	1,045	1,795	1,296	526	483	333	276	249	414	591	996	719	900	698	595	712	578	1,591	1,674
26	Tipperah	2,026	1,889	1,020	1,101	885	684	656	531	653	963	1,532	1,723	1,652	1,290	1,393	895	1,231	872	2,457	2,111
	Patna Division.																				
27	Patna	5,000	4,126	3,915	3,716	1,177	1,251	908	664	636	618	1,934	1,760	1,859	1,562	2,151	1,727	2,371	2,191	3,289	3,920
28	Gya	4,13[illegible]	3,792	4,638	3,960	1,926	1,413	1,081	803	793	750	2,323	2,458	2,686	2,328	3,150	2,436	3,075	3,102	4,432	5,157
29	Shahabad	4,758	4,082	4,334	4,073	1,634	1,266	977	652	839	702	2,347	2,218	2,484	2,203	2,318	1,032	2,099	2,073	4,014	5,313
30	Mozufferpore	1,389	1,110	3,783	3,184	2,624	1,840	1,822	938	1,495	866	3,971	2,695	3,990	2,974	3,361	2,500	2,852	2,623	3,186	3,462
31	Durbhanga	1,651	1,435	4,101	3,474	2,516	1,756	1,148	834	1,195	865	2,990	2,336	3,244	2,661	2,033	2,245	2,511	2,275	3,207	3,797
32	Sarun	4,501	3,175	4,563	3,544	1,918	1,292	1,318	806	1,218	839	2,878	2,015	2,880	2,278	2,599	1,866	2,443	2,264	3,651	4,164
33	Chumparun	2,955	2,458	3,285	2,735	1,565	1,150	937	571	958	615	2,429	2,175	2,633	1,980	2,245	1,697	1,870	1,660	2,681	3,720
	Bhagulpore Division.																				
34	Monghyr	4,933	4,99[illegible]	6,912	6,474	2,886	2,101	1,600	1,025	900	769	2,060	2,630	2,971	2,309	3,041	2,415	2,990	2,979	4,151	5,120
35	Bhagulpore	3,759	3,223	5,010	4,517	2,698	2,0[illegible]2	1,745	1,123	1,397	1,133	3,954	3,051	4,127	3,438	3,682	2,888	3,111	3,215	2,930	3,416
36	Purneah	1,521	1,255	2,157	1,847	1,800	1,219	1,633	1,093	1,436	1,185	3,527	2,940	3,739	2,010	2,880	1,995	1,048	1,776	1,510	1,736
37	Maldah	666	565	1,467	1,217	1,040	719	772	473	678	627	1,420	1,203	1,296	890	940	677	707	563	1,020	1,017
38	Sonthal Pergunnahs	1,696	1,311	2,468	2,093	1,635	1,244	1,171	738	1,071	793	2,025	1,638	1,707	1,211	1,383	992	1,210	1,007	1,747	1,743
	Orissa Division.																				
39	Cuttack	3,641	3,850	2,757	3,081	1,086	1,466	976	683	1,012	1,167	2,259	2,376	2,376	2,048	1,865	1,278	1,667	1,529	2,828	3,573
40	Puri	2,157	1,947	1,036	1,031	640	508	406	295	546	509	1,118	1,073	1,264	1,012	1,124	803	1,041	875	1,448	1,754
41	Balasore	2,410	2,160	1,314	1,286	699	609	398	334	483	495	1,061	1,073	1,285	952	1,118	739	920	871	1,228	1,648
	Chota Nagpore Division.																				
42	Hazaribagh	1,511	1,388	1,732	1,663	953	809	627	441	483	414	1,420	1,186	1,764	1,308	1,400	968	1,190	1,281	1,716	1,789
43	Lohardugga	2,540	2,068	2,438	2,289	1,035	810	766	525	566	540	1,248	1,210	1,350	1,184	1,274	933	1,208	1,143	1,252	1,806
44	Singbhum	649	504	552	489	307	256	256	156	309	216	488	386	552	353	509	421	478	363	338	412
45	Manbhum	911	718	877	933	753	617	529	375	700	525	981	863	961	645	803	496	675	640	915	987
	Total for the Province	101,369	83,518	1,07,023	97,803	60,596	52,238	45,509	29,479	30,169	38,131	93,035	88,916	97,660	76,382	86,349	62,139	69,414	61,048	1,00,194	1,05,718
	Ratio per 1,000 living	132·85	106·29	27·12	23·07	13·60	10·88	12·13	9·80	15·77	14·98	17·92	15·04	20·07	16·28	26·74	19·59	30·87	30·09	63·34	49·89

Office of the Sany. Commr. for Bengal,
The 19th March 1886.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

Annual Form No. V.—*Deaths registered according to* **CLASS** *in the Districts of the Bengal Province during the year* 1885.

1	2	3						4						5					
		Population according to Census of 1881.						Number of Deaths registered.						Ratio of Deaths per 1,000 of Population.					
Numbers.	Districts.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.	Total.	Christians.	Hindus.	Mahomedans.	Buddhists.	Other classes.	Total.
	Burdwan Division.																		
1	Burdwan	910	1,120,676	263,816	...	6,421	1,391,823	5	28,374	7,078	...	69	35,526	5·49	25·31	26·82	...	10·72	25·52
2	Bankura	56	910,845	46,274	...	84,577	1,041,752	3	17,515	771	...	654	18,943	53·57	19·22	16·55	...	7·73	18·18
3	Birbhum	48	617,310	162,621	...	14,449	794,428	...	18,233	4,043	...	212	22,488	...	29·53	24·86	...	14·67	28·30
4	Midnapore	740	2,233,300	164,001	36	117,488	2,515,565	14	46,559	2,927	...	1,824	51,324	18·91	20·84	17·84	...	15·52	20·40
5	Hughli	290	533,033	129,702	2	23	663,050	9	12,996	3,386	..	......	16,391	31·03	24·38	26·10	...	...	24·72
6	Serampore	365	292,174	59,098	288	30	351,955	2	6,304	1,193	..	......	7,499	5·47	21·57	20·18	...	...	21·30
	Total of Hughli, including Serampore ...	655	825,207	188,800	290	53	1,015,005	11	19,300	4,579	...	......	23,890	16·79	23·38	24·25	..	..	23·53
7	Howrah	2,051	500,870	132,118	37	305	635,381	19	10,783	2,790	...	......	13,592	9·26	21·52	21·11	...	...	21·39
	Presidency Division.																		
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	9,928	1,003,110	604,723	230	429	1,618,420	81	19,707	11,915	...	......	31,703	8·16	19·64	19·70	..	...	19·58
	Suburbs of Calcutta ...	4,048	149,950	96,583	127	751	251,439	161	7,261	3,843	2	....	11,267	39·77	48·42	39·78	15·74	..	44·81
	Total of 24-Pergunnahs	13,976	1,153,060	701,306	357	1,180	1,869,859	242	26,968	15,758	2	......	42,970	17·31	23·38	22·46	5·60	...	22·98
9	Nuddea	6,422	727,890	921,395	1	13	1,655,721	158	24,639	32,748	..	.....	57,545	24·60	33·84	35·54	..	...	34·75
0	Jessore	492	768,322	1,170,505	...	56	1,939,375	13	20,266	29,676	...	......	49,955	26·42	26·37	25·35	...	..	25·75
1	Murshidabad	470	634,796	589,957	1	1,566	1,226,790	3	15,542	14,148	...	10	29,693	6·38	24·48	23·98	...	6·38	24·20
2	Khulna	747	523,657	555,514	...	....	1,079,948	19	11,148	13,996	...	......	25,163	25·43	21·86	24·65	...	.	23·30
	Rajshahye Division.																		
3	Dinajpur	457	716,630	795,824	.	1,435	1,514,346	3	14,573	17,646	...	12	32,234	6·56	20·33	22·17	...	8·36	21·28
4	Rajshahye	121	288,749	1,049,700	55	13	1,338,638	..	7,437	34,303	1	.....	41,741	...	25·75	32·67	18·18	..	31·18
5	Rungpore	86	816,532	1,279,605	60	1,681	2,097,964	..	20,568	33,070	...	16	53,654	..	25·18	25·81	.	9·51	25·57
6	Bogra	27	140,860	593,411	2	58	734,358	..	3,903	16,458	...	.....	20,361	...	27·70	27·73	...	...	27·72
7	Pubna	114	361,479	949,908	1	226	1,311,728	...	10,424	27,813	...	....	38,237	..	28·83	29·27	...	.	29·15
8	Darjiling	1,800	126,717	8,204	18,775	641	156,137	15	2,469	116	180	29	2,809	7·65	19·48	14·13	9·58	45·24	17·99
9	Julpaiguri...	159	367,891	208,513	486	4,513	581,562	...	8,957	5,993	1	165	15,116	...	24·34	28·74	2·05	36·56	25·99
	Dacca Division.																		
0	Dacca	8,799	856,680	1,250,687	49	135	2,116,350	159	18,002	24,280	...	......	42,441	18·07	21·01	19·41	...	...	20·05
1	Faridpore	2,741	653,992	974,983	13	5	1,631,734	29	10,923	14,527	...	...	25,479	10·58	16·70	15·09	..	...	15·61
2	Backergunge	3,717	624,597	1,267,694	4,797	84	1,900,889	64	13,421	32,506	25	.. ..	46,016	17·48	21·48	25·64	5·21	.	24·20
3	Mymensing	151	987,355	2,038,505	...	25,955	3,051,966	...	16,548	27,116	...	332	43,996	...	16·75	13·31	...	12·79	14·41
	Chittagong Division.																		
4	Chittagong	1,055	275,177	801,986	54,110	13	1,132,341	30	5,202	15,180	992	......	21,413	28·43	18·90	18·93	18·33	...	18·91
5	Noakhalli	588	211,476	608,592	114	2	820,772	17	4,280	13,381	...	......	17,678	28·97	20·23	21·32	..	...	21·53
6	Tipperah	199	511,025	1,007,740	374	......	1,519,338	2	10,084	16,981	...	......	27,067	10·05	19·73	16·85	...	...	17·81
	Patna Division.																		
7	Patna	2,588	1,541,061	213,141	...	66	1,756,856	20	40,150	5,211	...	.....	45,381	7·72	26·05	24·44	...	...	25·83
8	Gya	96	1,891,484	233,098	...	4	2,124,682	...	48,799	5,742	...	......	54,541		25·79	24·63	...	...	25·67
9	Shahabad	276	1,817,881	146,732	...	20	1,964,909	6	46,815	3,537	...	......	50,358	21·73	26·75	24·10	-	...	25·62
0	Mozufferpore	372	2,265,380	316,308	...	......	2,582,060	2	44,894	5,699	...	......	50,595	5·37	19·81	18·01	...	...	19·59
1	Durbhanga	325	2,323,979	308,085	..	158	2,633,447	3	41,955	5,492	...	.. ..	47,450	9·23	18·05	17·77	...	...	18·01
2	Sarun	282	2,010,958	269,142	...	.. ...	2,280,382	4	44,628	5,523	...	... ..	50,155	14·18	22·19	20·52	...	...	21·99
3	Chumparun	1,936	1,476,985	242,687	...	......	1,721,608	77	34,137	5,091	...	......	39,305	39·76	23·11	20·97	...	...	22·83
	Bhagulpore Division.																		
4	Monghyr	1,091	1,774,013	187,517	...	7,153	1,969,774	25	58,262	5,268	...	......	63,555	22·91	32·84	28·09	...	..	32·26
5	Bhagulpore	578	1,764,304	185,533	...	15,743	1,966,158	9	55,895	4,844	...	299	61,047	15·57	31·68	26·10	...	18·99	31·04
6	Purneah	327	1,076,639	771,130	...	691	1,848,687	1	24,320	15,816	...	8	40,145	3·05	22·59	20·59	..	11·57	21·71
7	Maldah	26	379,153	329,525	...	1,744	710,448	...	10,288	7,634	...	44	17,966	...	27·13	23·18	...	25·22	25·28
8	Sonthal Pergunnahs ...	3,057	847,590	108,899	132	608,415	1,568,093	13	19,234	2,114		7,522	28,883	4·25	22·69	19·41	.	12·36	18·41
	Orissa Division.																		
9	Cuttack	2,342	1,744,227	47,529	3	964	1,795,065	28	40,899	690	...	.. ...	41,617	11·95	23·44	14·51	...	...	23·18
0	Poori	819	873,664	14,003	...	1	888,487	5	20,411	225	..	... ..	20,641	6·10	23·36	16·13	...	...	23·23
1	Balasore	815	915,792	23,804	4	4,865	945,280	11	20,741	307	..	38	21,097	13·49	22·64	12·89	..	7·81	22·31
	Chota Nagpore Division.																		
2	Hazaribagh	552	924,811	106,097	...	73,282	1,104,742	3	20,128	2,189	...	1,671	23,991	5·43	21·76	20·63	...	22·80	21·71
3	Lohardugga	36,281	868,842	77,403	1	626,717	1,609,244	242	13,081	1,479	...	10,891	25,693	6·67	15·05	19·10	...	17·37	15·96
4	Singhbhum	2,998	555,046	3,282	...	618	561,964	11	7,931	86	..	26	8,054	3·68	14·28	26·20	...	40·12	14·33
5	Manbhum	552	946,247	45,453	23	65,953	1,058,228	4	13,402	678	..	856	14,940	3·62	14·16	14·91	..	12·99	14·11
	TOTAL FOR THE PROVINCE	101,884	42,953,029	21,361,057	79,721	1,667,293	66,163,884	1,270	992,378	485,218	1,201	24,678	1,504,745	12·46	23·09	22·71	15·05	14·80	22·74

Office of the Sany. Commr. for Bengal,
The 19*th March* 1886.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. VI.—*Deaths registered from* DIFFERENT CAUSES *in the*

1	2	3	4	5	6	7
Number.	DISTRICTS AND TOWNS.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
	DISTRICTS.					
	Burdwan Division.					
1	Burdwan	1,335,905	4,911	197	23,698	551
2	Bankura	989,108	1,572	28	12,239	602
3	Birbhum	786,580	5,327	12	12,778	286
4	Midnapore	2,446,201	3,390	137	35,063	3,768
5	Hughli	593,655	1,115	25	10,449	1,360
6	Serampore	305,231	283	3	3,911	929
	Total of Hughli, including Serampore ...	898,886	1,398	28	14,360	2,289
7	**Howrah**	529,753	938	41	5,272	2,586
	Presidency Division.					
8	24-Pergunnahs	1,424,329	3,212	15	20,193	1,089
9	Nuddea	1,560,321	6,569	29	43,397	302
10	Jessore	1,930,889	5,194	14	41,394	235
11	Murshedabad	1,143,106	2,087	16	22,267	179
12	Khulna	10,71,210	2,242	1	19,450	257
	Rajshahye Division.					
13	Dinajpur	1,501,786	2,886	7	26,958	360
14	Rajshahye	1,313,847	7,673	38	31,827	89
15	Rungpore	2,084,644	1,858	3	47,255	446
16	Bogra	728,179	3,073	13	15,441	127
17	Pubna	1,275,424	2,506	......	32,469	393
18	Darjiling	148,161	30	1	1,094	408
19	Julpaiguri	573,615	263	......	13,676	88
	Dacca Division.					
20	Dacca	2,023,628	2,984	247	26,304	2,948
21	Farridpore	1,621,471	3,504	10	18,900	644
22	Backergunge	1,887,708	3,936	199	27,188	729
23	Mymensing	3,004,853	5,203	189	29,812	1,407
	Chittagong Division.					
24	Chittagong	1,110,211	1,655	1	14,778	876
25	Noakhalli	815,648	1,169	60	13,433	293
26	Tipperah	1,488,289	2,657	73	18,121	800
	Patna Division.					
27	Patna	1,618,328	1,466	699	27,201	4,035
28	Gya	2,038,691	2,460	815	42,107	579
29	Shahabad	1,885,941	4,099	627	37,994	641
30	Mozufferpore	2,490,715	11,899	237	26,897	1,749
31	Durbhanga	2,567,351	6,791	227	31,348	2,911
32	Sarun	2,201,333	3,989	272	17,882	3,333
33	Chumparun	1,700,345	6,092	2,013	21,475	390
	Bhagulpore Division.					
34	Monghyr	1,886,174	5,330	628	48,974	646
35	Bhagulpore	1,908,705	6,419	273	44,263	1,552
36	Purneah	1,833,671	2,896	31	35,067	296
37	Maldah	698,018	4,260	9	12,521	36
38	Sonthal Pergunnahs	1,560,088	5,095	156	20,638	597
	Orissa Division.					
39	Cuttack	1,724,896	9,956	795	15,105	4,069
40	Poori	863,703	4,606	210	1,783	2,461
41	Balasore	925,015	3,390	231	6,753	4,668
	Chota Nagpore Division.					
42	Hazaribagh	1,089,436	3,537	145	17,083	940
43	Lohardugga	1,590,801	737	340	18,571	1,981
44	Singbhum	555,958	290	1	5,296	733
45	Manbhum	1,048,024	1,716	21	9,504	1,002
	TOTAL FOR DISTRICTS ...	63,886,829	161,860	9,089	1,009,333	54,426
	TOWNS.					
	Burdwan District.					
1	Burdwan	34,080	213	1	846	140
2	Kalna	10,901	126	......	126	32
3	Ranigunge	10,937	133	22	80	55
	Bankura District.					
4	Bankura	18,747	67	......	207	45
5	Bishenpore	21,288	52	......	270	24
6	Sonamukhi	12,616	104	......	154	22
	Birbhum District.					
7	Soor	7,848	137	......	134	7
	Midnapore District.					
8	Midnapore	33,560	143	......	235	139
9	Ghatal	12,638	44	......	145	54
10	Chandrakona	12,257	8	......	117	66
11	Ramjibanpore	10,909	23	......	94	20
	Hughli District.					
12	Hughli	38,718	50	......	536	214
13	Jehanabad	10,507	17	......	152	18
14	Khanacool	7,708	20	1	115	26
15	Shambazar	12,462	6	......	276	34

Districts and Principal towns of the Bengal Province during the year 1885.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.													FROM ALL CAUSES.		
Male.	Female.	Wounds or Accident.	Snake-bite or killed by Wild Beasts.	Total.	All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
23	31	118	143	315	3,768	33,440	3·07	·14	17·74	·41	·23	2·82	25·03	27·18	1
20	11	88	153	272	2,844	17,597	1·58	·02	12·37	·60	·27	2·01	17·79	21·63	2
15	11	109	86	221	3,544	22,168	6·77	·01	16·24	·36	·28	4·50	28·18	28·17	3
12	19	161	559	751	5,750	49,754	1·38	·05	14·70	1·53	·30	2·35	20·33	19·72	4
13	18	80	147	258	1,145	14,352	1·87	·04	17·60	2·29	·43	1·02	24·17	21·05	5
13	16	32	69	129	872	6,127	·92	·009	12·81	3·04	·42	2·85	20·07	18·41	6
26	33	112	216	387	2,017	20,479	1·55	·03	15·97	2·54	·43	2·24	22·78	19·48	
20	34	139	172	371	1,598	10,806	1·77	·07	9·95	4·88	·70	3·01	20·39	16·07	7
31	58	300	400	879	2,068	27,406	2·25	·01	14·17	·72	·61	1·15	19·24	20·22	8
86	112	263	595	1,050	4,196	55,549	4·21	·01	27·81	·19	·67	2·68	35·60	42·77	9
46	99	258	390	793	2,027	49,657	2·68	·007	21·43	·12	·41	1·04	25·71	24·93	10
20	50	140	405	615	1,443	26,607	1·82	·01	19·47	·15	·53	1·26	23·27	26·40	11
22	39	184	231	476	2,539	24,974	2·09	·0009	13·16	·23	·44	2·37	23·31	23·31	12
20	22	287	388	717	1,049	31,977	1·92	·004	17·95	·23	·17	·69	21·29	19·12	13
38	78	335	501	952	540	41,119	5·81	·02	24·13	·06	·72	·40	31·17	30·49	14
8	7	263	309	587	2,969	53,113	·88	·001	22·66	·21	·28	1·42	25·47	15·12	15
10	19	222	218	469	1,024	20,147	4·22	·01	21·20	·17	·64	1·40	27·66	21·79	16
18	66	176	317	577	942	36,877	1·96	..	25·45	·30	·45	·73	28·91	20·36	17
15	1	38	6	60	151	2,704	·20	·006	11·43	3·15	·40	3·04	18·25	8·08	18
4	4	45	45	98	798	14,923	·45	...	23·84	·15	·17	1·30	26·01	16·36	19
51	61	255	225	592	6,491	30,566	1·47	·12	12·90	1·45	·29	3·20	19·55	18·66	20
29	67	262	313	671	1,518	25,247	2·16	·006	11·65	·39	·41	·93	15·57	13·27	21
32	58	821	185	1,096	12,607	45,755	2·08	·10	14·40	·38	·58	6·67	24·23	21·57	22
26	52	355	286	719	5,314	42,704	1·73	·06	9·92	·48	·23	1·76	14·21	8·75	23
6	7	482	67	562	2,836	20,708	1·49	·0009	13·31	·78	·50	2·56	18·65	16·82	24
6	4	337	49	396	2,234	17,585	1·43	·07	16·46	·35	·48	2·73	21·55	19·16	25
8	17	478	60	563	4,122	26,336	1·78	·04	12·18	·53	·37	2·76	17·69	12·64	26
28	69	589	222	908	7,790	42,049	·90	·43	16·80	2·49	·56	4·81	26·01	25·80	27
44	135	665	240	1,084	3,288	50,333	1·20	·39	20·65	·28	·53	1·61	24·68	18·32	28
22	47	456	147	672	4,882	48,915	2·17	·33	20·14	·33	·35	2·58	25·93	14·73	29
2	26	807	5[illegible]8	1,393	5,606	47,781	4·77	·09	10·79	·70	·55	2·25	19·18	13·74	30
15	8	676	455	1,154	2,556	44,982	2·64	·08	12·20	1·13	·14	·99	17·52	12·21	31
20	65	642	295	1,022	21,161	47,599	1·81	·12	8·12	1·51	·46	9·58	21·62	15·43	32
5	27	490	349	871	7,061	38,502	3·93	1·18	12·62	·22	·51	4·15	22·64	13·59	33
26	50	470	308	943	3,741	60,262	2·82	·13	25·96	·34	·49	1·98	31·94	12·68	34
4	4	341	282	631	5,223	58,361	3·36	·14	23·19	·81	·33	2·73	30·57	16·20	35
4	9	151	183	347	924	39,561	1·57	·01	19·12	·16	·18	·50	21·57	17·91	36
3	5	17	211	236	506	17,568	6·10	·01	17·92	·05	·33	·72	25·16	18·87	37
17	14	160	153	344	1,811	28,641	3·26	·09	13·22	·38	·22	1·16	18·35	11·76	38
62	130	1,159	826	1,677	8,822	30,924	5·77	·46	8·75	2·35	·97	4·82	23·14	19·57	39
43	42	226	89	400	9,574	19,034	5·33	·24	2·06	2·84	·48	11·08	22·03	20·74	40
17	46	238	142	443	5,030	20,515	3·66	·24	7·30	5·04	·47	5·43	22·17	25·12	41
6	32	345	120	503	1,403	23,611	3·24	·13	15·68	·86	·46	1·28	21·67	16·04	42
7	5	259	238	509	3,174	25,312	·46	·21	11·67	1·24	·31	1·99	15·91	16·63	43
34	41	41	149	265	1,289	7,874	·52	·001	9·52	1·31	·47	2·31	14·16	14·31	44
3	6	115	88	212	2,104	14,649	1·63	·02	9·06	·95	·20	2·09	13·96	12·81	45
959	1,721	14,165	10,964	27,809	170,204	1,432,721	2·53	·14	15·79	·85	·43	2·66	22·12	18·20	
1	...	9	4	14	190	1,413	6·25	·02	24·82	4·10	·41	5·83	41·46	42·31	1
1	1	2	1	5	61	850	11·55	...	11·55	2·93	·45	5·59	32·10	28·62	2
...	...	2	......	2	31	323	12·16	2·01	7·31	5·02	·18	2·83	29·62	28·80	3
2	...	3	......	5	158	483	3·57	...	11·04	2·40	·26	8·42	25·71	29·02	4
1	1	2	4	8	127	481	2·44	...	12·68	1·12	·37	5·96	22·60	37·11	5
1	...	3	1	5	98	383	8·24	...	12·20	1·74	·30	7·76	30·35	30·75	6
...	...	1	......	1	41	320	17·45	...	17·07	·89	·12	5·22	40·77	33·63	7
...	1	9	2	12	341	863	4·26	...	7·00	3·93	·35	10·13	25·71	32·21	8
...	...	3	2	5	29	277	3·48	...	11·47	4·27	·39	2·29	21·91	21·44	9
...	...	2	3	5	74	270	·65	...	9·54	5·38	·40	6·03	22·02	20·76	10
1	...	......	1	2	21	160	2·10	...	8·61	1·83	·18	1·92	14·66	25·11	11
2	2	7	1	12	311	1,323	3·87	...	13·84	8·10	·30	8·03	34·17	26·60	12
...	...	......	1	1	12	195	1·61	...	14·46	1·23	·00	1·14	18·55	19·13	13
...	...	1	......	1	21	184	2·59	·12	14·91	3·37	·12	2·72	23·87	19·71	14
...	...	2	3	6	16	337	·48	...	22·14	2·72	·40	1·28	27·04	28·00	15

ANNUAL FORM No. VI. —*Deaths registered from* **DIFFERENT CAUSES** *in the*

Number.	Districts and Towns.	Population according to Census of 1881.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.
1	2	3	4	5	6	7
	TOWNS—*continued.*					
	***Hughli District*—concluded.**					
16	Serampore	26,496	80	1	377	228
17	Baidabatti	14,718	44	2	118	53
18	Utterpara	5,510	28	......	43	41
	Howrah District.					
19	Howrah	90,813	372	21	928	451
20	Balli	14,815	64	1	165	48
	24-Pergunnahs.					
21	Suburbs of Calcutta	251,439	1,877	69	4,100	2,099
22	South Suburban	51,658	91	7	439	173
23	Baranagore	29,982	130	27	307	167
24	Rajpore	10,576	11	......	101	11
25	Augurpara	22,739	51	10	390	75
26	Nawabgunge	18,018	70	1	242	73
27	Naihatti	21,533	207	1	385	82
28	Bussirhat	20,450	55	......	270	9
29	Badurea	19,135	35	......	227	10
	Nuddea District.					
30	Kishnaghur	27,477	120	......	352	38
31	Ranaghat	8,083	5	......	40	7
32	Santipore	29,687	113	......	234	10
33	Kushtia	9,717	89	1	107	9
34	Meherpore	5,731	4	......	69	6
35	Nobodip	14,105	148	......	261	22
	Jessore District.					
36	Jessore	8,495	39	......	194	10
	Murshidabad District.					
37	Berhampore	23,605	155	3	419	80
38	Kandi	10,661	12	......	176	18
39	City Murshidabad	39,231	210	8	961	133
40	Jungipore	10,187	40	2	184	73
	Khulna District.					
41	Satkhira	8,738	21	......	142	11
	Dinajpur District.					
42	Dinajpur	12,560	34	1	132	38
	Rajshahye District.					
43	Beauleah	19,791	72	21	343	97
	Rungpore District.					
44	Rungpore	13,320	12	......	414	34
	Bogra District.					
45	Bogra	6,179	21	......	142	18
	Pubna District.					
46	Pubna	15,267	34	1	316	28
47	Serajgunge	21,037	37	......	836	31
	Darjiling District.					
48	Darjiling	7,976	......	......	46	14
	Julpaiguri District.					
49	Julpaiguri	7,947	2	1	115	29
	Dacca District.					
50	Dacca	80,161	170	220	838	290
51	Naraingunge	12,561	63	2	78	41
	Faridpore District.					
52	Faridpore	10,263	9	3	185	12
	Backergunge District.					
53	Barisal	13,186	60	1	130	27
	Mymensing District.					
54	Jamalpore	16,091	68	3	263	27
55	Kishorgunge	12,898	54	......	140	11
56	Tangail	18,124	35	6	497	19
	Chittagong District.					
57	Chittagong	22,130	140	......	387	55
	Noakhalli District.					
58	Sudharam	5,124	7	......	48	5
	Tipperah District.					
59	Comillah	13,506	13	1	185	14
60	Brahmanberiah	17,543	20	......	279	18

Districts and Principal Towns of the Bengal Province during the year 1885—continued.

8					9	10	11								12
INJURY.					All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	RATIO OF DEATHS PER 1,000 OF POPULATION.								Number.
SUICIDE.		Wounds or Accident.	Snake-bite or killed by Wild Beasts.	Total.			Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	FROM ALL CAUSES.		
Male.	Female.												For the year.	Mean of previous five years.	
5	2	8	2	17	234	937	3·01	·03	14·22	8·60	·64	8·83	35·30	32·38	16
1	...	4	1	6	56	270	2·98	·13	8·01	3·60	·40	3·80	18·95	22·42	17
...	...	2	1	3	46	156	4·17		7·81	7·44	·54	8·34	28·31	27·04	18
3	10	37	5	55	610	2,437	4·09	·23	10·21	4·96	·60	6·71	26·83	28·91	19
...	...	.....	1	1	70	349	4·31	·06	11·13	3·23	·06	4·72	23·55	21·26	20
10	3	58	12	81	3,032	11,267	7·46	·27	16·34	8·34	·32	12·05	44·81	45·64	21
4	1	31	3	39	108	857	1·76	·13	8·49	3·34	·75	2·09	16·58	17·92	22
1	5	5	4	16	165	811	4·33	·90	10·23	5·57	·50	5·50	27·04	25·08	23
...	...	3	2	5	22	150	1·04		9·54	1·04	·47	2·08	14·18	19·47	24
2	...	9	3	14	62	602	2·[illegible]4	·43	17·15	3·29	·61	2·[illegible]2	26·47	24·31	25
...	...	8	1	4	75	465	3·88	·05	13·43	4·05	·22	4·16	25·80	21·86	26
...	4	4	4	12	73	760	9·61	·04	17·87	3·80	·55	3·39	35·29	29·25	27
...	1	5	......	6	26	346	2·68	...	13·20	·44	·29	1·27	17·89	31·29	28
2	.	1	3	6	8	286	1·82	..	11·86	·52	·31	·41	14·04	17·76	29
5	1	4	3	13	200	723	4·36		12·81	1·38	·47	7·27	26·31	47·67	30
...	..	1	......	1	13	75	·57	...	5·64	·80	·11	1·49	8·63	36·04	31
...	1	2	1	4	33	394	3·80		7·88	·33	·13	1·11	13·27	30·77	32
.	1	1	5	7	29	242	9·15	·10	11·01	·92	·72	2·98	24·90	15·02	33
...	...	......	3	3	15	97	·69	...	12·03	1·04	·52	2·61	16·92	13·79	34
...	2	....	......	2	32	465	10·49	...	18·50	1·55	·14	2·26	32·96	22·97	35
...	1	6	......	7	48	298	4·59	...	22·83	1·17	·82	5·65	35·07	33·43	36
1	...	8	1	10	160	827	6·56	·12	17·75	3·38	·42	6·77	35·03	22·32	37
1	...	3	7	11	38	255	1·12	...	16·30	1·68	1·03	3·56	23·91	28·04	38
...	...	16	7	23	313	1,648	5·35	·20	24·49	3·39	·58	7·97	42·00	36·38	39
...	1	6	6	13	44	356	3·92	·19	18·08	7·16	1·27	4·31	34·94	29·64	40
...	1	5	3	9	6	189	2·40	...	16·25	1·25	1·02	·68	21·62	24·37	41
2	...	6	1	9	43	257	2·70	·07	10·50	3·02	·71	3·42	20·46	20·14	42
1	2	7	3	13	76	622	3·63	1·06	17·33	4·90	·65	3·84	31·42	31·98	43
..	2	8	2	12	69	541	·90	...	31·08	2·55	·90	5·18	40·61	26·95	44
...	...	9	......	9	24	214	3·39	...	22·98	2·91	1·45	3·88	34·63	33·82	45
...	1	2	3	6	31	411	2·22	·06	20·69	1·50	·39	2·03	26·92	25·61	46
1	1	2	1	5	40	949	1·75	...	39·73	1·47	·23	1·90	45·11	21·05	47
...	...	3	... ..	3	42	105	...	...	5·76	1·75	·37	5·26	13·16	18·05	48
...	...	4	......	4	42	193	·25	·12	14·47	3·64	·50	5·28	24·28	32·71	49
2	1	8	......	11	1,060	2,589	2·12	2·74	10·45	3·61	·13	13·22	32·29	26·59	50
...	...	9	3	12	90	296	5·01	·15	6·20	3·26	·95	7·16	22·76	21·81	51
...	...	5	......	5	18	232	·87	·29	18·02	1·16	·48	1·75	22·60	28·84	52
...	1	12	2	15	38	261	3·79	·07	9·85	2·04	1·13	2·88	19·79	19·26	53
...	1	5	......	6	60	427	4·22	·18	16·34	1·67	·37	8·72	26·58	26·53	54
...	...	1	......	1	45	251	4·18	...	10·85	·85	·07	3·48	19·46	25·27	55
3	2	16	2	23	34	614	1·03	·33	27·42	1·04	1·26	1·87	33·87	12·30	56
...	...	10	1	11	112	705	6·32	...	17·48	2·48	·49	5·06	31·85	22·45	57
3	...	2	......	5	28	93	1·36	...	9·36	·97	·97	5·46	18·15	15·61	58
1	...	4	......	5	61	279	·06	·07	13·69	1·03	·37	4·51	20·65	20·73	59
...	...	2	1	3	137	452	1·14	...	15·90	·74	·17	7·80	25·76	22·91	60

ANNUAL FORM No. VI.—*Deaths registered from* DIFFERENT CAUSES *in the*

1	2	3	4	5	6	7
Number	Districts and Towns	Population according to Census of 1881	Cholera	Small pox	Fevers	Bowel complaints
	TOWNS—*concluded*					
	Patna District					
61	Behar	18,971	174	3	[illegible]	64
62	Dinapore	[illegible]	[illegible]	1	918	88
63	Barh	[illegible]	[illegible]	6	[illegible]	[illegible]
64	Mokameh	[illegible]	15	18	207	38
	Gya District					
65	Gya	[illegible]	507	4	1,718	459
66	Daudnagar	9,870	1		186	7
	Shahabad District					
67	Arrah	43,465	133	28	414	98
68	Dumraon	[illegible]	93	8	[illegible]	[illegible]
69	Buxar	[illegible]	30	3	131	11
	Mozufferpore District					
70	Mozufferpore	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
71	Sitamarhi	[illegible]	[illegible]	1	[illegible]	18
72	Hajipur	[illegible]	88	[illegible]	199	[illegible]
73	Lalganj	[illegible]	[illegible]	14	316	[illegible]
	Durbhunga District					
74	Durbhunga	[illegible]	[illegible]	58	707	[illegible]
	Sarun District					
75	Chupra	[illegible]	371	5	[illegible]	[illegible]
76	Siwan	[illegible]	104	3	[illegible]	[illegible]
77	Revelgunge	[illegible]	[illegible]	1	174	[illegible]
	Chumparun District					
78	Bettiah	[illegible]	184	45	[illegible]	11
	Monghyr District					
79	Monghyr	[illegible]	[illegible]	14	[illegible]	325
80	Jamalpur	[illegible]	268	1	[illegible]	[illegible]
81	Shaikpura	[illegible]	76	8	[illegible]	1
	Bhagulpore District					
82	Bhagulpore	57,453	295	5	1,215	404
	Purneah District					
83	Purneah	[illegible]	13	1	481	31
	Maldah District					
84	English Bazar	12,430	126	1	293	7
	Sonthal Pergunnahs District					
85	Deoghur	8,005	89		95	20
	Cuttack District					
86	Cuttack	[illegible]	224	3	154	89
87	Kendrapara	[illegible]	34	20	157	22
88	Jajpur	[illegible]	93	8	104	28
	Pooree District					
89	Pooree	22,764	713	1	210	148
	Balasore District					
90	Balasore	20,265	124	2	128	124
	Hazaribagh District					
91	Hazaribagh	15,306	172	1	72	59
	Lohardugga District					
92	Ranchi	18,443	33		269	37
	Singbhum District					
93	Chyebassa	6,006	48		96	31
	Manbhum District					
94	Purulia	9,804	49		183	37
	TOTAL FOR TOWNS	2,277,055	11,907	774	32,809	9,382
	TOTAL FOR THE PROVINCE	66,163,864	173,767	9,863	1,042,142	63,808

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19*th March* 1886.

Districts and Principal Towns of the Bengal Province during the year 1885—concluded.

8					9	10	11								12
INJURY.							RATIO OF DEATHS PER 1,000 OF POPULATION.								
SUICIDE.													FROM ALL CAUSES.		
Male.	Female.	Wounds or Accident.	Snake-bite or killed by Wild Beasts.	Total.	All other Causes.	TOTAL DEATHS FROM ALL CAUSES.	Cholera.	Small-pox.	Fevers.	Bowel-complaints.	Injury.	All other Causes.	For the year.	Mean of previous five years.	Number.
1	1	17	3	22	239	958	3·55	·06	9·31	1·30	·44	4·88	19·56	28·79	61
...	...	12	3	15	104	642	2·31	·01	6·08	1·58	·28	1·90	12·29	10·20	62
3	1	28	2	34	309	1,334	2·11	·28	32·31	7·28	1·44	13·08	56·50	15·62	63
...	..	3	......	3	72	348	1·09	1·31	15·08	2·40	·21	5·24	25·36	27·91	64
2	2	64	1	69	1,228	3,985	6·06	·05	22·56	6·02	·90	16·13	52·35	45·78	65
...	...	3	1	4	25	223	·10	...	18·84	·70	·40	2·53	22·59	31·40	66
...	...	37	1	38	107	816	4·44	·59	9·52	·87	·87	2·46	18·77	21·28	67
...	...	3	2	5	59	404	5·21	·44	12·50	·89	·28	3·30	22·65	18·55	68
..	...	5	......	5	43	223	1·69	·16	7·41	·62	·28	2·43	12·62	20·26	69
2	...	13	13	28	137	1,474	6·41	·91	18·15	5·14	·65	3·20	34·48	20·65	70
...	1	3	1	5	71	356	27·91	·16	10·12	7·51	·81	11·59	68·12	27·26	71
...	...	14	3	17	99	502	3·23	·23	7·74	3·81	·66	3·85	19·53	15·60	72
1	...	5	......	6	96	482	1·66	·83	18·82	1·31	·35	5·72	28·71	17·39	73
...	...	20	5	25	487	2,468	8·32	1·33	12·05	7·88	·37	7·36	37·33	21·15	74
5	..	16	5	26	335	1,650	6·96	·09	10·23	4·65	·48	6·66	29·10	21·95	75
...	...	2	2	4	215	567	8·19	·22	10·22	3·00	·30	16·15	38·10	16·60	76
2	1	4	3	10	97	499	7·12	·08	13·92	10·24	·80	7·76	39·94	31·29	77
1	...	12	1	14	190	803	8·65	2·11	16·89	·51	·65	8·93	37·76	22·05	78
...	...	21	12	33	325	1,981	6·24	·24	16·08	5·65	·37	5·65	34·44	23·86	79
...	...	12	2	14	171	787	19·61	·07	18·57	6·11	1·03	12·60	58·02	32·88	80
...	...	15	8	23	42	525	6·07	·63	29·95	·07	1·83	3·35	41·94	26·92	81
1	...	27	10	38	729	2,686	5·13	·08	21·14	7·03	·66	12·68	46·75	36·51	82
...	1	5	1	7	51	584	·86	·06	32·03	2·06	·46	3·39	38·89	39·29	83
...	...	......	4	4	27	398	10·13	·08	18·74	·56	·32	2·17	32·01	24·37	84
...	...	2	......	2	86	242	11·11	...	11·86	2·49	·24	4·49	30·23	20·74	85
1	2	21	3	27	453	950	5·18	·06	3·56	2·05	·02	10·47	21·97	19·91	86
...	...	4	2	6	195	434	2·16	1·27	10·00	1·40	·38	12·42	27·64	29·49	87
...	...	2	......	2	74	309	8·27	·71	9·25	2·49	·17	6·58	27·50	26·70	88
3	2	9	1	15	520	1,607	28·76	·04	8·47	5·97	·60	20·98	64·84	57·57	89
2	...	7	4	13	191	582	6·11	·09	6·31	6·11	·64	9·42	28·71	28·86	90
...	1	5	......	6	70	380	11·23	·06	4·70	3·85	·30	4·57	24·82	24·23	91
...	...	7	3	10	32	381	1·78	...	14·58	2·00	·54	1·73	20·65	10·30	92
...	...	3	1	4	1	180	7·99	...	15·98	5·16	·66	·16	29·97	21·47	93
...	...	5	......	5	47	291	5·26	...	16·44	3·97	·53	5·05	31·27	25·15	94
81	62	787	217	1,147	16,005	72,024	5·22	·33	14·40	4·12	·50	7·02	31·63	28·64	
1,040	1,783	14,952	11,181	28,956	186,209	1,504,745	2·62	·14	15·75	·96	·43	2·81	22·74	18·59	

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

ANNUAL FORM No. VII—*Deaths registered from* CHOLERA *in the*

1	2	3		4							
		CIRCLES OF REGISTRATION.		VILLAGES.							
Number	DISTRICTS.	Number in each district.	Number from which deaths from Cholera were reported.	Number in each district.	Number from which deaths from Cholera were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan...	20	20	3,607	688	60	96	604	1,169	1,643	942
2	Bankura ...	13	13	5,374	281	10	21	184	371	300	258
3	Birbhum	8	8	3,214	662	101	36	117	281	1,054	1,467
4	Midnapore	29	29	14,306	948	593	385	362	328	275	353
5	Hughli ...	12	12	1,523	220	27	70	299	200	109	19
6	Serampore	8	8	924	91	19	56	73	82	42	8
	Total of Hughli, including Serampore	20	20	2,447	311	46	126	372	282	151	27
7	Howrah ...	8	8	1,496	258	290	203	228	167	105	28
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	... ..	.. ...	971	521	670	572	209	116
	Suburbs of Calcutta ...	1	1	......	......	106	116	336	421	217	104
	Total of 24-Pergunnahs	32	32	5,390	835	1,077	637	1,006	993	426	220
9	Nuddea ...	31	31	3,072	1,144	135	250	1,791	2,172	855	256
10	Jessore	22	22	5,059	907	772	453	1,119	933	769	153
11	Murshidabad	27	27	3,697	550	85	16	41	487	412	203
12	Khulna ...	14	14	2,890	650	178	187	443	174	241	60
	Rajshahye Division.										
13	Dinajpur	18	18	6,021	835	192	33	47	292	557	267
14	Rajshahye	14	14	6,114	940	138	63	199	1,985	3,334	1,173
15	Rungpore	17	17	6,737	277	21	13	17	317	378	137
16	Bogra ...	10	10	4,162	654	28	... .	689	1,475	466	61
17	Pubna ...	10	10	3,969	459	12	5	122	843	686	145
18	Darjiling	5	3	943	9	... ..	......	1	2	3	19
19	Julpaiguri	9	8	1,071	62	.. ...	......	.....	14	10	42
	Dacca Division.										
20	Dacca ...	14	14	6,706	1,068	319	101	140	524	428	99
21	Faridpore	14	14	4,655	698	662	384	321	1,087	449	9[illegible]
22	Backergunge	17	17	4,336	1,157	413	261	710	910	1,077	317
23	Mymensing	18	18	14,676	1,175	601	345	241	608	1,334	484
	Chittagong Division.										
24	Chittagong	14	14	1,390	265	241	153	194	343	309	126
25	Noakhali ...	10	10	2,614	254	96	186	222	197	175	49
26	Tipperah ...	13	13	6,451	687	512	228	263	331	313	99
	Patna Division.										
27	Patna	17	16	5,976	484	1	2	52	180	189	148
28	Gya	14	14	6,531	355	20	51	38	102	86	207
29	Shahabad ..	14	14	5,131	367	......	1	4	140	383	434
30	Mozufferpore	13	13	5,152	1,039	......	......	... .	61	174	369
31	Durbhanga	11	11	6,359	510	.. ..	8	15	72	66	698
32	Sarun	13	13	4,578	523	......	......	2	47	36	161
33	Chumparun	10	10	7,766	612	. ....	. ....	......	13	68	41
	Bhagulpore Division.										
34	Monghyr ..	14	14	4,288	746	1	5	71	46	60	489
35	Bhagulpore	13	13	3,495	681	. ...	3	4	110	109	124
3	Purneah	14	14	3,645	339	. .	4	.....	6	10	9
37	Maldah ..	10	10	2,901	658	148	89	239	916	1,283	543
38	Sonthal Pergunnahs	6	6	11,254	1,510	15	75	45	40	136	357
	Orissa Division.										
39	Cuttack ...	13	13	8,792	2,488	347	1,205	1,329	782	731	348
40	Poori	6	6	5,166	1,309	510	1,040	498	178	74	75
41	Balasore ..	10	10	6,435	938	134	195	379	437	331	307
	Chota Nagpore Division.										
42	Hazaribagh	17	17	7,805	506	......	7	71	19	345	815
43	Lohardugga	22	13	5,876*	45	... ..	. . .	.....	.....	54	27
44	Singbhum	6	6	3,023	80	......	1	55	91	12	64
45	Manbhum	17	17	6,147	205	9	12	100	101	577	611
	TOTAL FOR THE PROVINCE ...	647	634	231,705	29,230	8,067	6,880	12,395	19,926	20,473	13,000

* Exclusive of the number of villages in the Palamow

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19*th March* 1886.

Districts of the Bengal Province during each month of the year 1885.

5						6			7			8	9
						Total.			Ratio of Deaths per 1,000 of Population.			Mean ratio per 1,000, during previous five years.	Number.
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.		
333	304	60	59	13	40	2,946	2,437	5,383	4·10	3·36	3·86	1·68	1
200	218	167	62	3	1	953	842	1,795	1·87	1·57	1·72	·93	2
804	1,006	427	111	34	26	2,778	2,686	5,464	7·28	6·50	6·87	1·57	3
221	115	121	132	322	401	1,897	1,711	3,608	1·52	1·34	1·43	1·27	4
18	38	334	136	18	40	667	641	1,308	2·11	1·84	1·97	·92	5
14	41	35	4	12	44	281	140	430	1·61	·83	1·22	1·88	6
32	79	369	140	30	84	948	790	1,738	1·93	1·50	1·71	1·25	
26	20	45	54	84	124	766	608	1,374	2·42	1·90	2·16	2·37	7
29	35	47	14	56	622	2,130	1,732	3,862	2·57	2·19	2·38	2·08	8
107	39	19	35	123	254	1,210	667	1,877	8·21	6·39	7·46	7·95	
136	74	66	49	179	876	3,340	2,399	5,739	3·42	2·68	3·07	2·88	
29	19	7	161	764	609	3,781	3,267	7,048	4·69	3·84	4·25	4·27	9
38	14	3	7	173	799	2,796	2,437	5,233	2·91	2·48	2·69	2·86	10
287	334	131	167	191	60	1,360	1,144	2,504	2·31	1·78	2·04	2·32	11
48	17	2	4	18	291	1,254	1,009	2,263	2·20	1·97	2·09	2·42	12
204	180	242	220	238	448	1,641	1,279	2,920	2·09	1·74	1·92	·31	13
457	304	58	8	4	22	4,293	3,452	7,745	6·50	5·09	5·78	2·23	14
86	64	111	102	257	362	985	880	1,865	·92	·85	·88	·73	15
108	64	13	3	48	139	1,677	1,417	3,094	4·49	3·91	4·21	·96	16
63	......	.. .	38	286	377	1,393	1,184	2,577	2·14	1·78	1·96	1·90	17
3	1	......	1	... .	......	17	13	30	·19	·10	·19	·58	18
93	36	33	15	11	11	140	125	265	·45	·45	·45	·93	19
18	5	7	9	133	1,434	1,701	1,516	3,217	1·63	1·40	1·52	2·00	20
24	37	1	4	68	378	1,894	1,619	3,513	2·34	1·96	2·15	2·32	21
81	23	18	10	23	143	2,223	1,763	3,986	2·28	1·90	2·09	2·57	22
161	38	21	45	342	1,140	2,964	2,396	5,360	1·90	1·59	1·75	1·16	23
270	105	43	10	......	1	914	881	1,795	1·71	1·46	1·58	·98	24
71	7	3	......	9	161	611	565	1,176	1·47	1·39	1·43	·51	25
14	6	3	4	18	899	1,429	1,261	2,690	1·85	1·68	1·77	1·25	26
204	620	235	120	64	3	999	827	1,826	1·16	·92	1·03	1·46	27
696	1,007	511	185	107	18	1,559	1,409	2,968	1·49	1·30	1·39	1·64	28
242	825	838	1,186	402	10	2,270	2,145	4,415	2·38	2·11	2·24	1·58	29
680	3,483	4,668	2,409	496	25	6,849	5,606	12,455	5·41	4·25	4·82	1·83	30
631	890	1,179	2,203	1,355	224	4,030	3,311	7,341	3·11	2·48	2·78	1·17	31
336	1,554	1,718	628	65	16	2,424	2,134	4,558	2·23	1·78	1·99	·78	32
132	2,150	2,965	1,190	283	34	3,745	3,131	6,876	4·30	3·67	3·99	1·72	33
1,148	2,037	964	648	543	19	3,253	2,778	6,031	3·36	2·77	3·06	·91	34
417	1,682	1,181	1,690	1,227	158	3,434	3,280	6,714	3·50	3·32	3·41	1·09	35
63	107	187	772	1,452	209	1,502	1,407	2,909	1·60	1·54	1·57	1·19	36
269	147	124	247	203	178	2,365	2,021	4,386	6·81	5·56	6·17	1·18	37
835	2,118	1,066	221	160	66	2,870	2,305	5,184	3·66	2·94	3·30	·67	38
463	881	598	637	1,910	1,067	5,034	5,273	10,307	5·73	5·74	5·74	2·90	39
1,046	632	220	88	386	572	2,790	2,529	5,319	6·24	5·72	5·98	2·82	40
328	187	76	258	440	442	1,837	1,677	3,514	3·98	3·46	3·71	4·47	41
745	976	509	191	37	.....	2,124	1,585	3,709	3·89	2·83	3·35	·47	42
59	235	177	167	14	37	381	389	770	·47	·47	·47	·14	43
56	11	19	22	6	1	193	145	338	·68	·51	·60	·18	44
250	54	32	16	3	.....	962	803	1,765	1·83	1·50	1·66	·71	45
12,347	22,675	19,213	14,302	12,404	11,906	93,331	80,436	173,767	2·84	2·41	2·62	1·59	

Sub-division which has not been furnished.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal

ANNUAL FORM No. VIII.—*Deaths registered from* **SMALL-POX** *in the*

1	2	3		4						
		CIRCLES OF REGISTRATION.		VILLAGES.						
Number.	DISTRICTS.	Number in each district.	Number from which deaths from Small-pox were reported.	Number in each district.	Number from which deaths from Small-pox were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1	Burdwan	20	14	8,667	63	19	39	54	80	45
2	Bankura	13	6	5,374	20	1	......	2	7	10
3	Birbhum	8	5	3,244	13	......	1	0	......	3
4	Midnapore	20	12	14,308	74	14	11	21	17	10
5	Hughli	12	8	1,523	11	......	5	6	2	4
6	Serampore	8	4	924	3	......	......	......	......	......
	Total of Hughli, including Serampore ...	20	12	2,447	14	.. ...	5	6	2	4
7	Howrah	8	8	1,498	10	3	9	13	8	14
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta	31	13	......	......	11	7	14	10	10
	Suburbs of Calcutta	1	1	......	... ..	7	10	20	13	8
	Total of 24-Pergunnahs ..	32	14	5,390	22	18	17	34	23	18
9	Nuddea	31	10	3,072	17	1	1	6	3	4
10	Jessore	22	7	5,059	8	3	1	... ..	5	2
11	Murshidabad	27	10	3,697	15	......	......	2	3	5
12	Khulna	14	1	2,890	3	... ..	......	......	1	....
	Rajshahye Division.									
13	Dinajpur	18	5	6,921	6	......	1	1	.... .	......
14	Rajshahye	14	9	6,114	20	1	8	10	10	14
15	Rungpore	17	3	6,737	3	......	1	1	......	... ..
16	Bogra	10	2	4,162	15	2	1	1	......	1
17	Pubna	16	1	3,969	1	......	......	1	......	... ..
18	Darjiling	5	1	943	2	......	......	......	1	.... .
19	Julpaiguri	9	1	1,071	6	......	......	.....	1	......
	Dacca Division.									
20	Dacca	14	12	6,706	197	48	56	91	123	65
21	Faridpore	14	7	4,655	4	1	5	1	1	2
22	Backergunge	17	14	4,336	97	21	41	53	32	12
23	Mymensing	18	17	14,676	135	8	6	11	31	28
	Chittagong Division.									
24	Chittagong	14	1	1,390	1	1	.....	......	......	......
25	Noakhalli	10	8	2,614	40	11	13	9	16	4
26	Tipperah	13	6	6,451	37	34	20	15	3	2
	Patna Division.									
27	Patna	17	16	5,976	737	49	70	152	154	125
28	Gya	14	18	6,531	325	49	82	144	146	118
29	Shahabad	14	14	5,131	311	98	44	97	124	87
30	Mozufferpore	13	13	5,152	175	9	25	46	71	42
31	Durbhanga	11	11	6,359	379	13	22	82	83	41
32	Saran	13	13	4,578	217	17	8	41	79	58
33	Chumparun	10	10	7,766	655	68	85	163	356	499
	Bhagulpore Division.									
34	Monghyr	14	13	4,286	327	13	84	191	145	108
35	Bhagulpore	13	11	3,495	187	13	21	40	65	40
36	Purneah	14	8	3,615	19	3	2	5	4	4
37	Maldah	10	4	2,901	11	......	2	1	1	6
38	Sonthal Pergunnahs	6	5	11,254	115	17	18	31	30	28
	Orissa Division.									
39	Cuttack	13	13	8,792	549	85	279	263	96	42
40	Poori	6	6	5,166	137	37	41	44	26	24
41	Balasore	10	9	6,435	153	41	90	36	9	7
	Chota Nagpore Division.									
42	Hazaribagh	17	16	7,805	101	30	15	12	26	29
43	Lohardugga	22	9	5,876*	370	10	21	42	37	40
44	Singhbhum	6	1	3,023	1	......	......	......	......	.....
45	Manbhum	17	5	6,147	14	3	3	6	2	6
	TOTAL FOR THE PROVINCE ...	647	376	231,705	5,615	741	1,148	1,784	1,771	1,547

* Exclusive of the number of villages in the Palamow

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19*th March* 1886.

Districts of the Bengal Province during each month of the year 1885

5							6			7		8			9	10
							Total			Number of these deaths among children		Total ratio per 1,000 of population			Mean ratio per 1,000 of previous five years.	
June	July	August.	September	October	November	December	Male	Female	Total	Under one year	Under 12 years	Male	Female	Total		Number
23	3	6	1	.			118	102	2 0	21	112	17	14	15	05	1
2	2	4			..		14	14	8	4	17	02	0	02	05	2
1						1	7	[illegible]	12	3	7	1	01	01	01	3
18	9	5	11	1	5	15	84	53	137	4	19	06	04	05	34	4
2	4	2				1	14	12	26	1	[illegible]	04	03	03	05	5
5			1				2	4	6			01	02	01	[illegible]	6
7	4	2	1			1	16	16	32	1	[illegible]	03	03	03	05	
7	3	2	2	2			37	26	63	8	25	11	08	03	06	7
4		3	1		1		40	21	61	8	16	04	[illegible]	03	05	8
8	3						49	20	69	3	20	13	11	27	38	
12	3	3	1		1		89	41	130	11	36	09	04	06	[illegible]	
3	2		1	6		3	8	22	30	3	15	003	[illegible]	01	05	9
1			1		1		8	6	14	3	6	0 8	06	007	01	10
9	1	4	2		3		16	14	[illegible]	1	7	[illegible]	03	[illegible]	11	11
							1		1			001		0009	[illegible]	12
	4		1	1			4	4	8	2	3	005	[illegible]	005	03	13
13	2			1			32	27	59	5	9	04	[illegible]	04	01	14
			1				3		3			[illegible]		001	01	15
4	[illegible]				2		11	2	13		3	[illegible]	[illegible]	[illegible]	005	16
							1		1			001		0007	005	17
							1		1			01		006	17	18
							1		1	1	1	003		001	14	19
56	13	6	2	3		7	248	221	469	[illegible]	204	23	21	22	07	20
3							8	5	13			009	008	[illegible]	15	21
6	15	5	4	4	1	[illegible]	109	91	200	10	52	11	09	10	22	22
15	24	12	9	6	2	46	106	92	198	24	75	06	06	06	14	23
								1	1		1		001	0008	40	24
3	2	.	.			2	31	34	60	8	31	07	07	07	[illegible]	[illegible]
		.					46	28	74	10	25	05	03	04	24	[illegible]
58	32	26	8	2	11	10	375	352	727	142	620	43	39	41	42	27
198	63	26	15	4	9	32	420	309	819	144	679	40	38	38	42	28
85	61	22	10	5	10	21	382	292	684	164	660	40	27	33	06	29
50	26	6	11	3	7	1	164	133	297	45	[illegible]	12	10	11	14	30
21	19	20	2	2	2	8	167	148	[illegible]	80	210	[illegible]	11	11	17	31
34	27	6	5	2	2	2	131	150	281	94	250	[illegible]	12	12	36	32
401	280	123	36	26	8	13	1,140	918	2 058	618	[illegible]	1 30	1 07	1 19	53	33
78	14	2	1	3	7	5	904	357	661	[illegible]	621	30	3	33	27	34
36	18	23	19	4		..	138	140	278	85	209	14	14	14	36	35
1	2	8		1	1	1	14	18	32	7	14	01	01	01	07	36
							4	6	10		10	01	01	01	07	37
16	8	5	3			.	102	54	156	15	[illegible]	13	[illegible]	09	07	38
15	18	7	5		4	12	405	421	826	251	325	[illegible]	4	46	1 77	39
17	9	6		1	2	4	103	108	211	36	138	3	24	23	2 60	40
7	2	1	7	2		31	123	110	233	51	161	26	[illegible]	24	68	41
5	14	5	7	3	1		78	68	146	18	68	14	12	13	24	42
58	63	20	14	18	7	10	174	166	340	7	14	21	20	21	37	43
1				.	..	..	.	1	1				003	001	16	44
.		..	...	.	... .	1	14	7	21	3	17	03	01	01	04	45
1,224	747	354	180	99	86	232	5 226	4,637	9 863	2 217	7 414	1	13	14	26	

Sub-division which has not been furnished.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal

ANNUAL FORM No. IX.—*Deaths registered from* **FEVERS** *in*

1	2	3		4						
		CIRCLES OF REGISTRATION.		VILLAGES.						
Number.	DISTRICTS.	Number in each district.	Number from which deaths from Fever were reported.	Number in each district.	Number from which deaths from Fever were reported.	January.	February.	March.	April.	May.
	Burdwan Division.									
1										
2	Burdwan	20	20	3,607	3,084	2,262	2,125	2,458	1,834	2,025
3	Bankura	13	13	5,374	3,353	1,027	972	1,102	1,074	1,036
5	Birbhum	8	8	3,244	2,385	1,219	1,127	1,108	1,034	978
4	Midnapore	20	29	14,306	9,491	3,293	3,046	3,117	2,788	2,580
4	Hughli	12	12	1,523	1,425	1,159	1,016	1,100	866	744
6	Serampore	8	8	924	682	372	403	448	366	275
	Total of Hughli, including Serampore ...	20	20	2,447	2,107	1,531	1,419	1,548	1,232	1,019
	Howrah	8	8	1,490	1,081	567	510	600	473	421
	Presidency Division.									
8	24-Pergunnahs, exclusive of Suburbs of Calcutta ..	31	31	......	......	2,820	1,955	2,074	1,790	1,319
	Suburbs of Calcutta	1	1	......	......	381	309	363	275	263
	Total of 24-Pergunnahs ...	32	32	5,390	4,331	2,701	2,264	2,437	2,065	1,582
9	Nuddea	31	31	3,072	2,733	3,503	3,277	4,225	3,656	3,107
10	Jessore	22	22	5,059	4,310	4,213	3,100	3,243	2,993	2,801
11	Murshidabad	27	27	3,697	2,842	1,918	1,824	1,988	2,071	1,795
12	Khulna	14	14	2,890	2,385	1,890	1,495	1,434	1,440	1,201
	Rajshahye Division.									
13	Dinajpur	18	18	6,921	5,690	2,375	2,267	2,427	2,183	2,051
14	Rajshahye	14	14	6,114	4,867	3,488	2,796	3,179	3,314	3,265
15	Rungpore	17	17	6,737	4,098	3,237	2,812	2,956	2,391	2,254
16	Bogra	10	10	4,162	2,909	1,634	1,429	1,401	1,534	1,108
17	Pubna	10	10	3,969	2,906	3,483	2,027	2,850	3,520	2,827
18	Darjiling	5	5	943	303	154	108	129	112	147
19	Julpaiguri	9	9	1,071	964	1,152	1,103	1,057	905	1,177
	Dacca Division.									
20	Dacca	14	14	6,706	3,087	2,464	1,854	1,973	2,245	1,990
21	Faridpore	14	14	4,655	2,276	16,13	1,182	1,493	1,548	1,287
22	Backergunge	17	17	4,336	2,657	2,504	1,892	1,982	1,889	2,209
23	Mymensing	18	18	14,676	6,841	2,478	2,167	2,015	2,430	2,198
	Chittagong Division.									
24	Chittagong	14	14	1,390	1,056	1,256	1,131	1,007	895	1,271
25	Noakhalli	10	10	2,614	1,789	1,319	1,222	1,417	1,107	1,158
26	Tipperah	13	13	6,451	4,090	1,631	1,442	1,541	1,355	1,353
	Patna Division.									
27	Patna	17	17	5,976	3,889	1,464	1,350	1,801	1,773	1,819
28	Gya	14	14	6,531	5,226	2,065	2,245	2,750	2,426	2,226
29	Shahabad	14	14	5,131	4,896	1,476	1,369	1,646	1,930	1,878
30	Mozufferpore	13	13	5,152	3,589	1,945	1,687	2,370	2,123	2,003
31	Durbhanga	11	11	6,359	2,248	1,096	1,888	2,270	2,206	2,325
32	Sarun	13	13	4,578	1,897	881	854	1,216	1,502	1,536
33	Chumparun	10	10	7,766	2,144	1,481	1,238	1,722	1,628	1,814
	Bhagulpore Division.									
34	Monghyr	14	14	4,286	3,247	2,266	2,314	3,501	2,908	2,305
35	Bhagulpore	13	13	3,495	2,667	2,343	2,126	3,011	2,869	2,779
36	Purneah	14	14	3,615	3,541	3,132	2,844	3,141	2,641	2,633
37	Maldah	10	10	2,901	2,418	1,214	871	976	1,276	1,057
38	Sonthal Pergunnahs	6	6	11,254	7,874	1,117	1,023	1,175	1,100	1,832
	Orissa Division.									
39	Cuttack	13	13	8,792	5,005	1,576	1,354	1,585	1,099	1,144
40	Poori	6	6	5,166	1,241	173	183	179	143	165
41	Balasore	10	10	6,435	2,663	592	457	463	452	382
	Chota Nagpore Division.									
42	Hazaribagh	17	17	7,805	4,318	985	911	1,064	1,048	1,020
43	Lohardugga	22	22	5,876*	2,912*	1,128	1,179	1,483	1,316	1,178
44	Singhbhum	6	6	3,023	2,016	458	418	458	433	393
45	Manbhum	17	17	6,147	3,548	510	530	650	786	792
	TOTAL FOR THE PROVINCE ...	647	647	231,705	147,675	79,404	70,041	80,208	75,777	71,618

* Exclusive of the number of villages in the Palamow

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19*th March* 1886.

the Districts of the Bengal Province during each month of the year 1885.

5							6			7			8	9
							Total.			Ratio of Deaths per 1,000 of Population.				
June.	July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
1,966	1,698	1,880	2,176	2,218	2,185	1,973	13,212	11,538	24,750	19·76	15·94	17·78	22·86	1
954	902	1,059	1,217	1,152	1,145	1,170	6,907	5,963	12,870	13·61	11·15	12·35	17·57	2
837	874	1,141	1,238	1,167	1,159	1,030	6,634	6,278	12,912	17·38	15·20	16·25	22·60	3
2,234	2,460	2,824	3,387	3,367	3,767	3,691	19,131	17,423	36,554	15·38	13·69	14·53	14·75	4
660	601	774	1,118	1,128	1,172	1,190	5,778	5,750	11,528	18·30	16·55	17·38	16·65	5
223	237	282	385	350	537	571	2,267	2,182	4,449	13·00	12·28	12·64	11·40	6
883	838	1,056	1,503	1,478	1,709	1,761	8,015	7,932	15,977	16·41	15·10	15·74	14·85	
343	361	428	590	647	743	673	3,402	2,963	6,365	10·74	9·29	10·01	8·54	7
1,201	1,382	1,770	1,911	1,920	2,316	2,596	12,108	10,446	22,554	14·61	13·21	13·93	15·60	8
246	295	344	352	370	462	449	2,229	1,880	4,109	15·14	18·03	16·34	17·88	
1,447	1,677	2,114	2,263	2,290	2,778	3,045	14,337	12,326	26,663	14·69	13·78	14·25	15·91	
3,232	2,566	3,196	4,155	4,575	4,809	4,078	24,566	19,903	44,469	30·48	23·41	26·85	34·13	9
2,027	2,324	2,848	2,906	4,298	5,552	5,274	22,509	19,079	41,588	23·46	19·46	21·44	20·55	10
1,448	1,721	1,714	2,185	2,958	2,506	1,899	13,228	10,779	24,007	22·55	16·83	19·56	22·53	11
1,008	1,132	1,386	1,737	1,860	2,530	2,488	9,858	9,743	19,601	17·34	19·04	18·15	18·23	12
1,595	1,646	1,822	1,974	2,241	2,879	3,630	15,874	11,216	27,090	20·29	15·32	17·88	17·28	13
2,111	1,631	2,073	1,878	2,283	3,404	2,748	17,891	14,279	32,170	27·09	21·04	24·03	27·15	14
2,371	2,797	3,378	4,709	5,018	8,106	7,580	26,250	21,419	47,669	24·58	20·78	22·72	14·35	15
964	1,008	1,177	1,019	1,194	1,459	1,626	8,365	7,218	15,583	22·44	19·95	21·21	18·84	16
2,049	1,823	1,842	2,251	2,661	3,501	4,197	18,557	15,064	33,621	28·62	22·70	25·63	17·17	17
135	167	175	175	148	161	139	1,083	657	1,740	12·11	9·84	11·14	5·59	18
1,046	1,097	991	907	1,099	1,508	1,689	7,645	6,146	13,791	25·02	22·26	23·71	14·28	19
1,599	1,478	1,594	1,937	2,569	3,507	4,010	14,499	12,721	27,220	14·02	11·75	12·86	12·41	20
1,039	897	938	1,250	1,680	2,951	3,307	10,167	8,918	19,085	12·61	10·79	11·69	9·56	21
1,640	1,697	1,848	2,121	2,251	3,207	3,982	14,127	13,191	27,318	14·51	14·22	14·37	12·14	22
2,137	2,264	2,686	2,508	2,770	3,480	3,614	17,098	13,614	30,712	11·00	9·08	10·06	6·13	23
1,304	1,520	1,524	1,256	1,346	1,316	1,330	7,907	7,258	15,165	14·87	12·08	13·39	11·42	24
863	861	932	884	955	1,267	1,496	6,614	6,867	13,481	15·92	16·93	16·42	14·99	25
1,097	1,270	1,144	1,583	1,711	2,027	2,131	10,094	8,491	18,585	13·09	11·34	12·23	9·15	26
1,677	2,102	3,842	3,707	3,539	3,765	2,620	14,862	14,083	28,945	17·30	15·68	16·47	15·40	27
2,472	3,164	5,105	5,640	6,503	5,514	3,001	22,778	21,233	44,011	21·82	19·63	20·71	14·71	28
2,101	2,184	3,136	4,776	6,580	7,285	4,381	19,671	19,091	38,762	20·70	18·81	19·72	11·20	29
1,832	1,919	2,857	2,876	3,491	3,027	2,120	15,812	12,438	28,250	12·19	9·44	10·94	8·34	30
2,544	2,273	3,190	3,484	4,085	3,539	2,631	17,329	14,811	32,140	13·36	11·07	12·20	8·71	31
1,429	1,722	2,181	2,182	2,189	1,785	1,200	10,535	8,202	18,737	9·72	6·85	8·21	6·43	32
1,508	1,470	2,206	2,167	1,826	2,755	2,019	11,992	9,842	21,834	13·77	11·56	12·68	8·27	33
2,888	3,315	5,551	7,065	6,830	7,146	4,437	26,449	24,077	50,526	27·29	24·06	25·65	10·87	34
2,715	2,985	4,103	5,284	6,873	6,114	4,276	23,969	21,509	45,478	24·48	21·79	23·13	12·89	35
2,245	2,004	2,122	2,374	3,525	4,789	4,098	19,738	15,810	35,548	21·06	17·34	19·22	16·21	36
792	728	662	983	1,510	1,471	1,214	7,221	5,533	12,754	20·83	15·22	17·95	16·74	37
1,145	1,641	2,505	2,863	2,762	2,157	1,913	11,464	9,269	20,733	14·59	11·84	13·22	9·89	38
795	851	1,017	1,048	1,253	1,842	1,056	7,593	7,927	15,520	8·65	8·64	8·64	8·06	39
116	134	119	132	165	201	283	1,011	982	1,993	2·26	2·22	2·24	4·94	40
390	363	531	650	642	877	1,081	3,408	3,473	6,881	7·38	7·17	7·27	7·33	41
1,115	1,159	1,027	2,130	1,946	2,067	1,783	8,870	8,285	17,155	16·27	14·79	15·52	13·42	42
1,293	1,361	1,878	2,241	2,114	1,948	1,721	9,940	8,900	18,840	12·47	10·95	11·70	12·43	43
384	394	426	503	464	492	569	2,924	2,468	5,392	10·40	8·78	9·59	10·21	44
727	701	1,112	1,220	810	857	872	5,127	4,530	9,657	9·75	8·50	9·12	9·27	45
64,506	67,269	80,490	99,323	110,929	125,467	111,101	558,693	483,449	1,042,142	17·01	14·50	15·75	13·42	

Sub-division which has not been furnished.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

Annual Form No. X.—*Deaths registered from* BOWEL-COMPLAINTS

1	2	3		4							
		CIRCLES OF REGISTRATION.		VILLAGES.							
Number.	DISTRICTS.	Number in each district.	Number from which deaths from Bowel-complaints were reported.	Number in each district.	Number from which deaths from Bowel-complaints were reported.	January.	February.	March.	April.	May.	June.
	Burdwan Division.										
1	Burdwan ...	20	20	3,667	288	68	66	73	97	100	72
2	Bankura ...	13	13	5,374	352	31	40	52	64	74	79
3	Birbhum ...	8	8	3,244	190	11	10	17	27	46	40
4	Midnapore	29	29	14,306	1,953	372	365	354	279	286	253
5	Hughli ..	12	12	1,523	481	166	112	132	114	93	92
6	Serampore	8	8	924	378	129	114	102	80	56	54
	Total of Hughli, including Serampore ...	20	20	2,447	859	295	226	234	194	149	146
7	Howrah ...	8	8	1,406	689	360	292	335	194	192	172
	Presidency Division.										
8	24-Pergunnahs, exclusive of Suburbs of Calcutta.	31	31	......	......	201	139	145	116	94	82
	Suburbs of Calcutta ...	1	1	......	......	276	174	135	109	87	84
	Total of 24-Pergunnahs ...	32	32	5,390	617	477	313	280	225	181	166
9	Nuddea ...	31	26	3,072	149	22	31	37	39	36	22
10	Jessore	22	20	5,059	122	26	38	23	18	16	15
11	Murshidabad	27	25	3,697	161	25	26	20	59	36	29
12	Khulna ...	14	14	2,890	184	32	25	19	25	25	25
	Rajshahye Division.										
13	Dinajpur	18	17	6,921	309	18	22	16	28	52	10
14	Rajshahye	14	12	6,114	52	10	6	11	19	25	17
15	Rungpore ..	17	17	6,737	234	24	21	31	38	86	26
16	Bogra ...	10	9	4,162	86	29	4	8	20	16	13
17	Pubna ...	10	10	3,969	240	18	14	21	120	48	27
18	Darjiling ...	5	5	943	128	20	14	22	26	61	60
19	Julpaiguri	9	8	1,071	63	19	6	10	10	8	5
	Dacca Division.										
20	Dacca ...	14	14	6,796	761	340	214	183	275	224	143
21	Faridpore	14	13	4,655	281	55	38	57	59	61	44
22	Backergunge	17	17	4,336	402	79	56	88	66	92	61
23	Mymensing	18	18	14,676	658	154	120	75	199	140	135
	Chittagong Division.										
24	Chittagong	14	14	1,390	345	122	77	53	70	88	63
25	Noakhalli	10	10	2,614	145	[illegible]	18	35	40	45	29
26	Tipperah	13	13	6,451	355	99	75	54	86	97	69
	Patna Division.										
27	Patna ...	17	17	5,976	1,422	240	167	270	359	312	304
28	Gya ...	14	14	6,531	289	58	53	53	53	56	73
29	Shahabad ..	14	14	5,131	493	25	35	51	63	49	93
30	Mozufferpore	13	13	5,152	840	137	102	120	170	183	160
31	Durbhanga	11	11	6,359	846	109	204	271	275	323	354
32	Sarun ...	13	13	4,578	880	215	181	267	297	321	245
33	Chumparun	10	10	7,766	201	17	12	24	16	26	44
	Bhagulpore Division.										
34	Monghyr ...	14	13	4,286	374	47	35	80	68	59	51
35	Bhagulpore	13	13	3,495	733	99	112	105	124	109	123
36	Purneah ..	14	13	3,645	141	13	13	20	43	39	42
37	Maldah ...	10	7	2,901	54	4	5	8	4	2	4
38	Sonthal Pergunnahs ...	6	6	11,254	434	16	18	19	15	35	42
	Orissa Division.										
39	Cuttack ...	13	13	8,792	2,375	379	364	433	304	333	279
40	Poori ...	6	6	5,166	1,447	251	229	232	192	198	172
41	Balasore ...	10	10	6.435	2,170	390	326	380	353	308	378
	Chota Nagpore Division.										
42	Hazaribagh	17	17	7,805	436	37	45	64	48	89	183
43	Lohardugga	22	22	5,876*	981*	79	97	123	137	131	154
44	Singbhum	6	6	3,023	430	54	54	52	55	65	73
45	Manbhum	17	17	6,147	706	53	62	75	93	136	157
	TOTAL FOR THE PROVINCE ...	647	627	231,705	24,778	5,009	4,240	4,764	4,946	4,908	4,607

* Exclusive of the number of villages in the Palamow

OFFICE OF THE SANY. COMMR. FOR BENGAL,
The 19*th March* 1886.

in the districts of the Bengal Province during each month of the year 1885.

5						6			7			8	9
						Total.			Ratio of Deaths per 1,000 of Population.				
July.	August.	September.	October.	November.	December.	Male.	Female.	Total.	Male.	Female.	Total.	Mean ratio per 1,000 of previous five years.	Number.
49	63	56	47	49	38	504	274	778	·73	·37	·55	·55	1
89	66	74	44	33	38	441	252	693	·86	·47	·66	·59	2
35	29	29	24	8	17	177	116	293	·48	·28	·36	·19	3
201	339	321	410	378	385	2,198	1,837	4,035	1·76	1·44	1·60	1·61	4
88	127	240	212	176	195	904	843	1,747	2·86	2·42	2·63	1·98	5
76	115	121	109	146	149	622	629	1,251	3·56	3·54	3·55	2·28	6
164	242	361	321	322	344	1,526	1,472	2,998	3·11	2·80	2·95	2·08	
163	212	264	291	269	341	1,567	1,518	3,085	4·95	4·76	4·85	3·55	7
96	122	145	152	162	180	890	749	1,639	1·07	·94	1·01	·84	8
134	163	192	205	231	309	1,269	830	2,099	8·62	7·96	8·34	7·19	
229	285	337	357	393	495	2,159	1,579	3,738	2·21	1·76	1·99	1·70	
20	19	18	40	59	56	205	189	394	·25	·22	·23	·52	9
9	11	16	13	18	42	152	93	245	·15	·09	·12	·14	10
30	55	75	41	40	47	282	201	483	·48	·31	·39	·28	11
26	17	19	15	10	30	148	120	268	·26	·23	·26	·28	12
30	40	22	51	51	58	284	114	398	·36	·15	·26	·20	13
10	20	19	16	19	14	145	41	186	·21	·06	·13	·09	14
29	18	56	39	93	67	300	180	480	·28	·17	·22	·19	15
18	4	2	7	14	10	96	49	145	·25	·13	·19	·10	16
19	14	21	33	41	61	265	172	437	·40	·25	·33	·22	17
83	63	43	34	30	26	250	232	482	2·79	3·47	3·08	1·26	18
8	7	12	8	10	11	70	47	117	·22	·15	·20	·17	19
142	143	166	200	500	659	1,783	1,496	3,279	1·72	1·38	1·54	1·15	20
49	35	40	52	78	88	384	272	656	·47	·32	·40	·32	21
61	46	60	48	50	49	420	336	756	·43	·36	·39	·35	22
108	79	105	110	154	145	910	614	1,524	·58	·40	·49	·26	23
141	103	65	60	51	38	488	443	931	·91	·73	·82	·55	24
21	11	17	12	21	29	171	127	298	·41	·31	·3	·25	25
49	39	51	47	60	101	407	360	827	·60	·48	·54	·29	26
361	693	564	445	449	228	2,374	2,013	4,387	2·76	2·24	2·49	2·32	27
95	189	160	118	70	79	601	444	1,045	·57	·41	·49	·44	28
69	84	80	62	55	40	457	249	706	·48	·24	·35	·36	29
168	276	305	216	163	126	1,310	825	2.135	1·03	·62	·82	·92	30
201	311	380	387	277	230	1,941	1,491	3,432	1·49	1·11	1·30	1·09	31
267	457	486	409	342	262	2,178	1,671	3,749	2·01	1·30	1·64	1·70	32
35	63	66	47	33	19	253	148	401	·29	·16	·23	·23	33
72	141	141	202	116	43	637	418	1,055	·65	·41	·53	·30	34
111	206	246	274	275	172	1,121	835	1,956	1·14	·84	·99	·68	35
28	34	13	40	25	17	192	135	327	·20	·14	·17	·13	36
6	8	2	3	2	......	31	12	43	·08	·03	·06	·04	37
74	104	85	77	54	78	394	223	617	·50	·25	·39	·24	38
310	396	324	351	393	342	2,520	1,688	4,208	2·87	1·84	2·34	1·92	39
275	252	230	212	161	205	1,474	1,135	2,609	3·30	2·56	2·93	2·52	40
358	472	464	412	451	500	2,658	2,134	4,792	5·75	4·41	5·06	5·08	41
150	155	112	71	56	39	647	352	999	1·18	·62	·90	·73	42
208	311	358	206	122	92	1,138	880	2,018	1·42	1·08	1·25	1·41	43
78	81	63	72	58	59	481	283	764	1·71	1·00	1·35	1·50	44
118	93	90	72	46	44	628	411	1,039	1·19	·77	·98	·89	45
4,857	6,274	6,413	6,081	5,900	5,800	36,427	27,381	63,808	1·10	·82	·96	·83	

Sub-division which has not been furnished.

R. LIDDERDALE, M.D.,

Deputy Surgeon-General,

Sanitary Commissioner for Bengal.

APPENDIX No. II.

STATEMENT AND MAP ILLUSTRATING THE DISTRIBUTION OF CHOLERA IN BENGAL.

DURING THE YEAR 1885.

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1885.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS.	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each Sub-division.	NUMBER OF THOSE Affected by Cholera.	NUMBER OF THOSE Not affected by Cholera.
Burdwan	1	Burdwan or Sudder	639,593	January 1885	December 1885	2,352	March to August	1,726	316	1,410
	2	Kalna	237,607	Ditto	Ditto	1,030	February, to June and October.	701	138	563
	3	Cutwa	230,209	Ditto	Ditto	766	February to August	528	109	419
	4	Raniganj	284,414	Ditto	October	1,235	March to August	712	125	587
		District Total	1,391,823	......	......	5,383	......	3,667	688	2,979
Bankura	5	Bankura or Sudder	647,085	January	November	889	March to September	3,900	150	3,750
	6	Bishenpur	394,667	Ditto	December	906	March to October	1,474	131	1,343
		District Total	1,041,752	......	......	1,795	......	5,374	281	5,093
Birbhum	7	Soori or Sudder	483,921	January	December	3,808	January and March to October.	2,020	416	1,604
	8	Rampurhat	310,507	Ditto	November	1,656	March to October	1,224	246	978
		District Total	794,428	......	......	5,464	......	3,244	662	2,582
Midnapore	9	Midnapore or Sudder	1,267,018	January	December	1,058	February and March	9,360	312	9,048
	10	Ghatal	287,333	Ditto	Ditto	374	April and September to November.	913	85	828
	11	Tumlook	479,218	Ditto	Ditto	1,029	January to July, November and December.	1,606	258	1,348
	12	Contai	481,996	Ditto	Ditto	1,147	January to April, June, July, November and December.	2,427	293	2,134
		District Total	2,515,565	......	......	3,608	......	14,306	948	13,358
Hughli	13	Hughli or Sudder	308,217	January	December	626	February to May	873	123	750
	14	Serampore	351,955	Ditto	Ditto	430	February to May, August, September and December.	924	91	833
	15	Jehanabad	354,833	Ditto	Ditto	682	April, May, September and October.	650	97	553
		Total of Hughli, excluding Serampore	663,050	......	......	1,308	......	1,523	220	1,303
		Total of Hughli, including Serampore	1,015,005	......	......	1,738	......	2,447	311	2,136
Howrah	16	Howrah or Sudder	311,644	January	December	629	January to May, November and December.	382	71	311
	17	Uluberia	323,737	Ditto	Ditto	745	January to May and October to December.	1,114	187	927
		District Total	635,381	......	......	1,374	......	1,496	258	1,238
24-Pergunnahs	18	Tollygunge or Sudder	835,899	January	December	3,223	January to July, November and December.	1,965	319	1,646
	19	Dum-Dum	31,578	March	Ditto	22	March, September and December.	91	9	82
	20	Barrackpore	62,417	January	Ditto	128	February to August	92	19	73
	21	Barasat	279,038	Ditto	Ditto	549	January to May and December.	916	86	830
	22	Bussirhat	316,597	Ditto	Ditto	794	February to May and December.	794	123	671
	23	Diamond Harbour	344,330	Ditto	Ditto	1,023	January to April, June and December.	1,532	279	1,253
		District Total	1,869,859	......	......	5,739	......	5,390	835	4,555
Nuddea	24	Kishnaghur or Sudder	374,973	January	December	2,101	January to June, November and December.	653	281	372
	25	Ranaghat	241,205	Ditto	Ditto	1,513	January to June and December.	510	312	198
	26	Kushtia	446,694	Ditto	Ditto	1,970	March to June and October to December.	861	314	547
	27	Chuadanga	254,295	Ditto	Ditto	698	February to May and December.	452	110	342
	28	Meherpore	338,554	Ditto	Ditto	766	March to May, November and December.	596	127	469
		District Total	1,655,721	......	......	7,048	......	3,072	1,144	1,928
Jessore	29	Jessore or Sudder	628,030	January	December	970	January to May and December.	1,688	193	1,495
	30	Jhenida	326,835	Ditto	Ditto	965	January to July, November and December.	902	169	733
	31	Magura	293,303	Ditto	Ditto	676	January, April, May, November and December.	879	133	746
	32	Narail	328,172	Ditto	Ditto	461	January, April and December.	810	164	646
	33	Bongong	362,126	Ditto	Ditto	2,161	January to May	780	248	532
		District Total	1,939,375	......	......	5,233	......	5,059	907	4,152

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1885—continued.

1	2	3	4	5	6	7	8	9	10	11
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the Sub-Divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each Sub-division.	Number of those — Affected by Cholera.	Number of those — Not affected by Cholera.
Khulna	34	Khulna or Sudder	341,359	January 1885	December 1885	986	January to June and December.	886	259	627
	35	Bagerhat	360,793	Ditto	Ditto	413	January to May and December.	849	153	696
	36	Satkhira	431,766	Ditto	Ditto	864	January, March to May and December.	1,155	238	917
		District Total	1,079,918	......	....	2,263	......	2,890	650	2,240
Murshidabad	37	Berhampur or Sudder	413,688	January	December	514	April, May, July, October and November.	1,014	74	940
	38	Kandi	294,809	Ditto	Ditto	775	April to December	765	156	609
	39	Lalbagh	184,213	Ditto	Ditto	471	March to November	969	137	832
	40	Jungipur	364,080	Ditto	Ditto	744	January and April to September.	949	163	786
		District Total	1,226,790	......	....	2,504	......	3,697	530	3,167
Dinajpur	41	District, there being no Sub-division.	1,514,346	January	December	2,920	January and April to December.	6,921	835	6,086
Rajshahye	42	Beauleah or Sudder	597,274	January	December	5,536	January and March to August.	2,631	629	2,002
	43	Nattore	472,785	Ditto	Ditto	938	April and May	1,995	162	1,833
	44	Nowgong	268,579	Ditto	Ditto	1,271	January and March to September.	1,488	149	1,339
		District Total	1,338,638	......	......	7,745	......	6,114	940	5,174
Rungpore	45	Rungpore or Sudder	666,721	March	December	702	April, May, September to November.	2,436	98	2,338
	46	Bodogra	445,824	February	Ditto	584	April to July and December.	392	70	322
	47	Kurigram	534,971	January	Ditto	300	May, November and December.	2,386	58	2,328
	48	Gaibanda	450,562	Ditto	Ditto	279	April and June	1,523	51	1,472
		District Total	2,097,964	....	....	1,865	......	6,737	277	6,460
Bogra	49	District, there being no Sub-division.	734,358	January	December	3,094	March to May, July and December.	4,162	654	3,508
Pubna	50	Pubna or Sudder	611,964	February	December	1,121	March to June and December.	1,840	207	1,633
	51	Serajgunge	699,761	January	Ditto	1,456	April, May, November and December.	2,129	252	1,877
		District Total	1,311,725	......	......	2,577	......	3,969	459	3,510
Darjiling	52	Darjiling or Sudder	65,959	August	August	1	......	122	1	121
	53	Kurseong	90,178	March	October	29	June	821	8	813
		District Total	156,137			30		943	9	934
Julpaiguri	54	Julpaiguri or Sudder	497,779	April	December	250	July	929	57	872
	55	Alipore	83,783	July	October	15	August	142	5	137
		District Total	581,562	......	......	265	......	1,071	62	1,009
Dacca	56	Dacca or Sudder	699,029	January	December	1,199	January, April, May, November and December.	2,366	277	2,089
	57	Naraingunj	470,657	Ditto	Ditto	775	April, May and December.	2,064	227	1,837
	58	Munshiganj	519,447	Ditto	Ditto	851	January, March, April and December.	825	356	469
	59	Manickganj	427,217	Ditto	Ditto	392	April, May and December.	1,451	208	1,243
		District Total	2,116,350	......	......	3,217	......	6,706	1,068	5,638
Faridpore	60	Faridpore or Sudder	620,545	January	December	1,726	January to May and December.	1,917	295	1,622
	61	Madaripore	689,704	Ditto	Ditto	969	January, February, April, May and December.	1,515	261	1,254
	62	Goalundo	321,485	March	Ditto	818	March to June	1,223	142	1,081
		District Total	1,631,734			3,513		4,655	698	3,957

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1885—continued.

1	2	3	4	5	6	7	8	9	10	11
DISTRICTS.	Number of Sub-divisions of mortuary registration.	NAMES OF THE SUB-DIVISIONS AS SHOWN ON THE MAP.	Population of the Sub-divisions.	Date of first case of Cholera in the Sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	PERIOD OF MAXIMUM INTENSITY OF THE DISEASE AS REPRESENTED BY DEATHS.	Number of villages in each Sub-division.	NUMBER OF THOSE Affected by Cholera.	NUMBER OF THOSE Not affected by Cholera.
Backergunge ...	63	Backergunge or Sudder ...	814,595	January 1885 ...	December 1885 ...	1,632	January to June and December.	1,982	196	1,186
	64	Perozepore	447,306	Ditto	Ditto	606	January to May ...	915	263	682
	65	Patuakhalli	426,758	Ditto ...	Ditto	1,469	January to June ...	1,001	329	672
	66	Bhola	212,230	Ditto ...	Ditto ...	299	January and March to July.	408	69	339
		District Total ...	1,909,889	...	...	3,986	...	4,336	1,157	3,179
Mymensing ...	67	Mymensing or Sudder ...	744,524	January	December	1,212	January, February, April to June and December.	3,653	350	3,303
	68	Netrokona	588,115	Ditto	Ditto	1,260	January to June and December.	1,117	199	3,918
	69	Jamalpore	497,766	Ditto	Ditto	952	April to July and December.	2,068	159	1,909
	70	Kishoreganj	467,320	Ditto	Ditto	1,124	January to June and December.	1,801	232	1,569
	71	Atia	754,241	Ditto	Ditto .	872	April May, November and December.	3,037	235	2,802
		District Total ...	3,051,968	......	....	5,360	..	14,676	1,175	13,501
Chittagong ..	72	Chittagong or Sudder ...	970,993	January	December .. .	1,137	January to May, July and August.	1,122	190	932
	73	Cox's Bazar	161,318	Ditto ..	September... ..	658	January to July	268	75	193
		District Total ..	1,132,311	...	......	1,795	....	1,390	265	1,125
Noakhalli ...	74	Sudharam or Sudder ...	578,797	January	December	525	January, February, May and December.	1,977	154	1,823
	75	Fenny	241,975	Ditto ...	Ditto ...	651	February to May and July.	637	100	537
		District Total ..	820,772	... ..	....	1,176	..	2,614	254	2,360
Tipperah ...	76	Comillah or Sudder ...	703,540	January	December	1,333	January to June and December.	3,733	377	3,356
	77	Brahmanberiah	531,417	Ditto ...	Ditto ..	759	January, March to May and December.	1,394	166	1,228
	78	Chandpur	284,381	Ditto ...	Ditto ...	598	January to April and December.	1,324	144	1,180
		District Total ...	1,519,338	.....	......	2,690	.....	6,451	687	5,764
Patna ...	79	Patna or Sudder ...	585,887	February	December	717	April, May and July to October	1,927	182	1,745
	80	Dinapore	166,128	March	Ditto ...	347	April, May and July to November.	392	74	318
	81	Barrh	376,074	January	November	280	May to August	1,110	69	1,041
	82	Behar	628,767	March	October	482	June to August	2,547	159	2,388
		District Total ...	1,756,856	.... .	. ....	1,826	..	5,976	484	5,492
Gya	83	Gya or Sudder	805,364	January	December	1,186	June to October . ..	2,840	179	2,661
	84	Aurangabad	445,641	April	Ditto	260	April, May and November.	1,604	28	1,576
	85	Jehanabad	385,189	Ditto	Ditto	330	July to September ...	825	16	779
	86	Nawada	488,488	February	October	1,192	June to September ..	1,282	122	1,160
		District Total ...	2,124,682	......	......	2,968	... .	6,531	355	6,176
Shahabad ...	87	Arrah or Sudder	700,273	February	December	1,312	August to November ...	1,383	107	1,276
	88	Buxar	423,193	March	Ditto	1,114	May to November ...	830	96	734
	89	Sasseram	519,207	April	Ditto	769	June to August, October and November.	1,867	69	1,798
	90	Bhabuah	322,236	Ditto	November	1,220	April to October ...	1,051	95	956
		District Total ...	1,964,909	......	......	4,415	.....	5,131	367	4,764
Mozufferpore ...	91	Mozufferpore or Sudder ...	1,019,635	April	December	4,447	June to November ..	2,041	459	1,582
	92	Sitamurhi	837,894	Ditto	Ditto	7,107	May to November ...	1,404	443	961
	93	Hajipur	724,531	Ditto	Ditto	901	June to September .	1,707	137	1,570
		District Total ...	2,582,060	......	.....	12,455	......	5,152	1,039	4,113
Durbhanga ...	94	Durbhanga or Sudder ...	969,999	April	December	2,614	June to November ...	2,260	166	2,094
	95	Tajpur	755,943	May	Ditto	316	August and September	1,173	46	1,127
	96	Madhubani	907,505	February	Ditto	4,411	July to December ..	2,923	298	2,628
		District Total ...	2,633,447	......	......	7,341	......	6,359	510	5,849
Sarun	97	Chupra or Sudder	985,834	March	December	1,912	June to October ...	1,732	219	1,513
	98	Sewan	749,482	April	November	1,044	August to October ...	1,518	170	1,348
	99	Gopalgunge	545,060	March	December	1,602	Ditto ...	1,328	134	1,194
		District Total ...	2,280,382	......	......	4,558	...	4,578	523	4,055

Statement prefixed to Map illustrating the distribution of Cholera in the Bengal Presidency during the year 1885—concluded.

1	2	3	4	5	6	7	8	9	10	11
Districts.	Number of Sub-divisions of mortuary registration.	Names of the Sub-divisions as shown on the Map.	Populations of the Sub-divisions.	Date of first case of Cholera in the sub-divisions as indicated by mortality.	Date of last case of Cholera in the Sub-divisions as indicated by mortality.	Total deaths from Cholera in the Sub-divisions during the year.	Period of maximum intensity of the disease as represented by deaths.	Number of villages in each Sub-division.	Number of those Affected by Cholera.	Number of those Not affected by Cholera.
Chumparun	100	Motihari or Sudder	1,017,556	April 1885	December 1885	4,216	August to November	4,594	383	4,211
	101	Bettiah	704,052	Ditto	Ditto	2,660	Ditto	3,172	229	2,943
		District Total	1,721,608	......	......	6,876	......	7,766	612	7,154
Monghyr	102	Monghyr or Sudder	834,376	January	December	2,775	June to November	1,546	315	1,231
	103	Beguserai	583,426	March	Ditto	1,336	July to November	754	166	588
	104	Jamui	551,972	February	November	1,920	June to October	1,986	265	1,721
		District Total	1,969,774	......	......	6,031	......	4,286	746	3,540
Bhagulpore	105	Bhagulpore or Sudder	546,809	February	December	1,710	April, May and July to November.	1,119	240	879
	106	Supol	600,874	Ditto	Ditto	1,515	July to November	881	143	738
	107	Madehpur	398,006	May	Ditto	1,421	August to December	535	71	464
	108	Banka	420,379	April	Ditto	2,068	July to November	960	227	733
		District Total	1,966,158	....	....	6,714	......	3,495	681	2,814
Purneah	109	Purneah or Sudder	511,045	June	December	1,165	October to December	944	137	807
	110	Arrarea	401,670	August	Ditto	784	September to December	684	74	610
	111	Kishenganj	631,301	February	Ditto	342	November	1,214	52	1,162
	112	Kadwa	303,762	April	Ditto	618	October to December	803	76	727
		District Total	1,848,687	......	......	2,909	......	3,645	339	3,306
Maldah	113	District, there being no Sub-division.	710,448	January	December	4,386	January to December	2,901	658	2,243
Sonthal Pergunnahs.	114	Dumka	363,186	January	December	783	July to September and November.	2,900	780	2,120
	115	Rajmahal	253,825	Ditto	November	593	May to September	1,326	113	1,213
	116	Pakur	204,919	March	Ditto	485	Ditto ditto	1,251	97	1,154
	117	Deoghur, including Jamtara	397,670	January	December	1,240	February and June to October.	4,010	267	3,743
	118	Godda	348,493	May	Ditto	2,083	June to December	1,758	253	1,505
		District Total	1,568,093	......	......	5,184	......	11,254	1,510	9,744
Cuttack	119	Cuttack or Sudder	720,454	January	December	3,442	January to May and July to December	3,556	989	2,567
	120	Kendrapara	575,113	Ditto	Ditto	2,532	January to June and August to December.	2,852	384	2,468
	121	Jajpur	490,498	Ditto	Ditto	4,333	January to December	2,384	1,115	1,269
		District Total	1,795,065	......	......	10,307	......	8,792	2,488	6,304
Poori	122	Poori or Sudder	565,082	January	December	3,537	January to May and July to December.	3,852	735	3,117
	123	Khurda	323,405	Ditto	Ditto	1,782	January to April and June to December.	1,314	574	740
		District Total	888,487	......	......	5,319	......	5,166	1,309	3,857
Balasore	124	Balasore or Sudder	519,707	January	December	1,185	January to August, November and December.	3,388	347	3,041
	125	Bhadruk	425,573	Ditto	Ditto	2,329	January to December	3,047	591	2,456
		District Total	945,280	......	......	3,514	......	6,435	938	5,497
Hazaribagh	126	Hazaribagh or Sudder	672,238	April	November	2,082	May to October	4,277	239	4,038
	127	Giridih	432,504	February	Ditto	1,627	March, and May to October.	3,528	267	3,261
		District Total	1,104,742	......	......	3,709	......	7,805	506	7,299
Lohardugga	128	Ranchi or Sudder	1,124,422	May	October	620	August and September	5,876	39	5,837
	129	Palamow	484,822	September	December	150	October	*	*	......
		District Total	1,609,244	......	......	770	......	......	......	......
Singbhum	130	District, there being no Sub-division.	561,964	February	December	338	March, April, June and July.	3,028	80	2,0[illegible]
Manbhum	131	Purulia or Sudder	861,644	January	November	1,356	March to July	4,366	203	4,163
	132	Govindpur	196,584	February	October	409	May to August	1,781	92	1,689
		District Total	1,058,228	......	......	1,765	......	6,147	295	5,852

* Not furnished

Office of the Sany. Commr. for Bengal,
The 19*th March* 1886.

R. LIDDERDALE, M.D.,
Deputy Surgeon-General,
Sanitary Commissioner for Bengal.

APPENDIX No. III.

SUMMARY OF SANITARY WORKS, IMPROVEMENTS, &c., CARRIED OUT IN TOWNS AND DISTRICTS.

DURING THE YEAR 1885.

Summary of the Sanitary Works, Improvements, &c., which were carried out in the Towns and Districts of Bengal during the year 1885.

IN TOWNS.

In Burdwan District.—*Burdwan.*—Rupees 39,980 expended for completing the water-works. *Cutwa.*—Strand road new metalled, cost Rs. 299; three lanes constructed Rs. 66; and pucca culverts on Nuniagola road supplied for effective drainage, Rs. 53. *Dainhat.*—Culverts supplied to Kalikabodi and Tamlipara roads for more effective drainage Rs. 22; and pucca side drain for the sudder road in progress. *Culna.*—Five arched and 4 planked culverts supplied to different roads for more effective drainage, and a pucca drain constructed at Mehal road, Rs. 211.

In Bankura District.—*Bankura.*—Two pucca drains and two culverts constructed, cost Rs. 513; and a latrine at Kuchkuchia in progress. *Bishenpur.*—Roads, a bridge and stone culverts constructed, Rs. 489; and roads and pucca drains in progress.

In Birbhum District.—*Poori.*—A filtering drain for the kutchery tank and a shed for the conservancy carts and bullocks constructed, Rs. 231 and Rs 45 respectively.

In Midnapore District.—*Midnapur.*—Rupees 557 expended in constructing roads, Rs. 820 in cutting new drains and bunding up the central drain, and Rs. 264 in draining out or closing foul tanks. *Tumlook.*—The main and Municipal markets newly metalled, Rs. 853, and a masonry building for Municipal market constructed, Rs. 701. Material improvement is said to have been effected by the latter work, and *Ghatal.*—A privy constructed for the hospital, Rs. 100; and roads and a hospital building in place of the old one which had been demolished by the earthquake in progress. *Chundrakona.*—Two new roads constructed, Rs. 36; and excavation of a tank and construction of two roads in progress. *Ramjibanpore.*—Two new roads constructed, Rs. 74, and two in progress. *Khirpai.*—Roads, culverts and bridges constructed, Rs. 152; a tank excavated with a view to supply good water, Rs. 200.

In Hooghli District.—*Hughli and Chinsurah.*—Four roads and two culverts constructed, cost Rs. 1,653; and 4 roads and 4 lanes newly metalled, Rs. 8,823. Of these roads the most important is the Strand Road, the metalling of which with stone cost Rs. 6,660, two drains and one road, and metalling of a road in progress. *Serampore.*—Drains, roads and 8 culverts constructed, Rs. 2,170; 3,415 feet of roads newly metalled; and two new plots of ground selected for burial of night-soil. *Uttarpara.*—Roads, drains and culverts constructed, Rs. 873. *Baidyabatti.*—Roads and culverts constructed, Rs. 2,216; the waterway increased by laying down Ranigunge pipes, and new metalling of 3 roads in progress. *Bhudressur.*—One pucca latrine built at Beldertooly, Rs. 226, and one pucca road constructed and provided with side-drains at Tolinipara, Rs. 901. *Kotrung.*—Roads and 12 culverts constructed, Rs. 438.

In Howrah District.—*Howrah.*—Four roads constructed, and nine newly metalled, cost not stated. *Bali.*—Roads and lanes constructed, Rs. 1,800.

In 24-Pergunnahs District.—*Suburbs of Calcutta.*—Woolfat Bagar bustee improved Rs. 124; three roads, five lanes and footpath metalled, and one lane protected with posts, Rs. 3,841; and pipe culverts and drain bridges provided to five roads and one lane, and six pipe drains to ward No. II, Rs. 217. *South Suburban.*—Four roads and one lane constructed, Rs. 2,022; and seven roads in progress. *Baranagore.*—Four roads metalled, Rs. 1,357. *Rajpore.*—Thirteen roads and one lane completed, Rs. 1,377; and eight roads, three lanes and nine culverts in progress. *Barripore.*—A pucca water passage to municipal tank No. 2 provided, Rs. 75; four culverts constructed, Rs. 74; and 2 roads newly metalled, Rs. 107. *Jaynagore.*—Three roads constructed, Rs 347. *South Dum-Dum.*—Three roads constructed and three newly metalled, Rs. 2,466. *Baraset.*—Roads metalled, Rs. 3,874, and four large and 20 small culverts constructed, Rs. 500. *Naihatty.*—Eleven roads newly metalled, Rs. 662; two culverts and two bridges constructed, Rs. 207; and metalling of eight roads in progress. *Bussirhat.*—Drainage works proceeded with Rs. 250. *Badurea.*—A dispensary built, Rs 101.

In Nuddea District.—*Krishnagur.*—Two public latrines constructed; two new trenching grounds opened; 109 well-privies filled up; the cutting admitting river water to the former bed of the Anjona improved to admit water to the tanks and swamps occupying the river bed, and to replenish the tanks, Rs. 435; and the tank in the jail compound cleared out, deepened and protected from pollution, Rs. 800. This tank now contains good drinking water, and is open to the public in the north-east of the town, where water was much needed. *Nuddea.*—A road metalled, Rs. 1,439. *Ranaghat.*—Roads and bridges constructed, Rs. 597. *Santipur.*—A tank excavated, Rs. 2,020; survey and level of the town taken, and plan of regular drainage prepared, Rs. 600; 6 roads constructed, Rs. 2,038; 8 culverts put up, Rs. 154; side drains provided to Nootanhat road, Rs. 86; and bunds on the strand road erected to prevent flooding of the town, Rs. 372.

In the Jessore District.—*Jessore.*—Two of Major Ramsay's moveable latrines brought into use, cost Rs. 194; a tank excavated at Sunkerpore, Rs. 1,656; 4 culverts put up in 3 roads, Rs. 279; and a pucca drain constructed at Doralain, Rs. 41. *Moheshpore.*—Five miles of kutcha drains excavated, Rs. 180; 1 mile of kutcha road constructed and one mile of roadway metalled, Rs. 939; 30,000 tiles, a roller and 50 earthen pipes purchased for constructing pucca drains, Rs. 884. *Kotchandpore.*—Two roads with culverts constructed, Rs. 108; and drainage works carried out, Rs. 433.

In the Khulna District.—*Khulna.*—Part of Foolpara road metalled, Rs. 112. *Satkhira.*—A tank excavated in Kitia for supply of good drinking water, Rs. 463.—*Chandurìa.*—Survey and plans of the town for a drainage scheme in progress.

In the Murshidabad District.—*Berhampore.*—Two pucca drains and a pucca drain culvert constructed to improve the drainage, cost Rs. 306; and a channel from the Khagra sluice to the Natial road to flush the Bistopore bhil with river water passing through the sluices in progress. *City Murshidabad.*—A bullock shed constructed with corrugated iron, Rs. 564; and latrines provided at Debipore and Baluchar, Rs. 125; and the Baluchar and Azimgunge drainage scheme in progress. *Kandi.*—Metalling of the sudder road in progress. *Jungipore.*—Two roads and one lane constructed, Rs. 445; and latrines in progress.

In the Dinajpur District.—*Dinajpur.*—Three roads metalled, cost Rs. 3,954 additions made to the sudder dispensary to meet insufficiency of accommodation and to provide a separate ward for cholera patients, Rs. 4,568; a drinking trough for bullocks, and a shed for keeping night-soil carts constructed, Rs. 160; and a latrine at Kashyepara and another at Batitolah in progress.

In the Rajshahye District.—*Beauleah.*—The Meapara public latrine reconstructed cost Rs. 75; main drainage channels constructed; and drainage works in progress. *Nattore.*—Four culverts and a large bamboo bridge over the Narod river constructed, Rs. 671; and the metalling of the Borgacha road in progress.

In the Bogra District.—*Bogra.* One pucca latrine built, cost Rs. 120; and a masonry culvert constructed and three roads newly metalled, Rs. 1,670. *Sherpur.*—One well sunk, Rs. 10, and a road in progress.

In the Pubna District.—*Pubna.*—Land acquired at Raghubpore for Mahomedan burial ground, cost Rs. 273; conservancy cart provided, Rs. 126; 95 Ranigunge pipes purchased for drainage, Rs. 188; bund over the Ichamatti constructed, Rs. 186; and one road metalled, Rs. 916. *Serajgunge.* Ghat constructed on bank of river, Rs. 263; six wells sunk, Rs. 78; silt removed from bed of Khatta khal, Rs. 552; one iron roller for roads purchased, Rs. 608; three bridges constructed on three roads, Rs. 242; and the metalling of the Fanapoti road in progress.

In the Darjiling District.—*Darjiling.*—*Conservancy*:—One two-seated and one four-seated latrines at Bhutea Busti; and two new latrines, one at Jore bunglow and one at Goompahar constructed; a wooden shoot and iron buckets supplied for the wire tramway, and a new cesspool for the Kayas latrine constructed, cost Rs 2,489. 17 private latrines constructed, two by Municipality at the cost of owners; six private latrines demolished on the ground of their being nuisances; and several private latrines rendered efficient at the request of the Municipality. It would prove very beneficial if this procedure were more generally imitated, for the private latrines in Bengal are for the most part wretched structures. The establishment for removing night-soil considerably increased, and the permission of Government sought to use certain lands as night-soil depôts. *Market*:—Three sheds containing 50 shops built at the covered market, which has improved its appearance. This completes the market. *Drainage*:—Lochnagar Jhora extended Rs. 477; a drain from Jhora between Eden falls and Hawk's rest; a drain from jail road to the pound; half of Jeeton Jhora drain; a drain at Butcher's busti; a drain from the servants' quarter of the Town Hall to Mall road; a stone drain through Messrs. Doyle and John White's land near Caroline Villa; a stone drain from Mr. Rosamond's compound to Aucland road; a stone drain in front of the Deputy Commissioner's kutchery, and a wooden drain near Baboo Bhoobun Chunder Haldar's house at Chandmari constructed. These drains cost Rs. 3,252. *Water-supply*:—A line of water-pipes laid on to Butcher's busti and another to Judge's bazar on the cart road, Rs. 916. The pipe line taken under the slaughter-house, Rs. 6. The question of six additional springs for increasing water-supply under consideration. *Building*:—A round-roofed barrack in the central bazar; an additional verandah to the round-roofed barrack in the bazar south of the Hindu temple; two sheds over the cesspools of the serai stables; a barrack for sweepers at Jore bungalow; an additional verandah to barrack No. 8 in Bhojawallaputty; an additional verandah to the round-roofed barrack in the central bazar in front of Jetmall's barrack; a shed for the tramway breaksman at the upper stage. These buildings cost Rs. 2,714. *Arboriculture*:—Two hundred criptomeria trees planted, and arrangement made with the Superintendent of the Royal Botanical Garden, Calcutta, for attending to the work for the next ten years. Seven outlet drains in the native town; a stone drain in the Lobong spur zigzag below Bhutia busti; a stone drain along the Birch Hill road from opposite Rook's Nest to Sunny Sight and Snowy View in progress. *Kurseong.*—A latrine for males below travellers' shed and one urinal constructed, Rs. 193. Water-works extended, Rs. 972.

In the Dacca District.—*Dacca.*—Much land acquired either for widening narrow lanes, for permitting the access of mehters or carts into gors and to other places, for a bullock depôt, and for various other purposes, cost already paid Rs. 1,306; sheds constructed for the domes, mehters, bullocks, latrine, burning ghat, &c., Rs. 7,111; a wall for female ward in Mitford hospital constructed, Rs. 200; two wells sunk, Rs. 44; the Chauk road metalled, Rs. 3,736; a pucca saucer drain in Nawab's main gate, a drain at Armanitolah; a drain at Pannitolah; and one at Santibagan constructed, Rs. 292; levels taken and survey made for improving Baboo Bazar khal for drainage purposes; several earthenware drain connections made departmentally; several night-soil and watering carts built at the workshop; the water-works extended to Hindu Hostel, Rs. 150, to Baboo Bazar mosque Rs. 71, to Cemetery road paid by a private gentleman, to the Railway at cost of Railway Company; the compound of the water-works yards levelled, Rs. 87. *Naraingunge.*—Iron latrines put up, including masonry foundations, Rs. 1,517; two houses erected in the trenching ground, Rs. 69; a branch road to trenching ground constructed, Rs. 77; Suterparah road, Rs 228; and road from Hajigunge to river, Rs. 386, constructed; Ranigunge pipes laid in three roads, Rs. 107; a culvert at Palpara constructed, Rs. 89; a bridge at Shital Lakhya with flooring constructed, Rs. 2,584; compensation paid for land for a burial ground Rs. 225; a house erected in Paikpara burial ground, Rs. 40; the ground of Mahomedan cemetery raised, Rs. 365; bamboo palisades put up in burning ghat, Rs. 118; and compensation paid for land for various purposes, Rs. 2,783. A mehter's shed, metalling of a road, and houses in Khanpoor burial ground in progress.

In the Faridpore District.—*Faridpore.*—A drain, cost Rs 67, and a road, Rs. 19, constructed, and a tank excavated in front of charitable hospital, Rs. 498. *Madaripore.*—A tank excavated in Madaripore village, Rs. 200, and another re-excavated in the west of sub-jail, Rs. 200. *Goalundo.*—The water supply improved, Rs. 397, and a latrine constructed, Rs. 48.

In the Backerganj District.—*Barisal.*—A drain excavated from Kalibari tank to the khal near Wazed's house, cost Rs. 100; stoneware pipes laid in the Sagardi road, Rs. 491, and a shed for cholera and small-pox patients constructed, Rs. 70. *Nalchiti.*—A tank excavated Rs. 125. *Perozepore.*—Tanks excavated, Rs. 103.

In the Mymensing District.—*Nasirabad.*—A shed constructed for isolating cholera patients, Rs. 500, and three plots of land acquired for trenching night-soil and burial of carcasses, Rs 663. *Muktagacha.*—A latrine constructed Rs. 18, a tank excavated, Rs. 476, a masonry well sunk, Rs. 450, and three roads constructed, Rs. 321. *Sherpore.*—A latrine, Rs. 8, and a road, Rs. 100, constructed; and a tank excavated, Rs. 231.

In the Noakhali District.—*Sudharam.*—A kutcha latrine enclosed by mat tattees constructed, cost Rs. 292; and the big tank for drinking purposes cleaned out, Rs. 85.

In the Patna District.—*Patna.*—Two lanes widened, cost Rs. 2,880, and the opening of another lane in progress, Rs. 2,000. This large amount could have been beneficially employed in completing the outfall drain, which is more important than the widening of lanes. *Behar.*—A latrine built at Auhier mohullah, Rs. 75; a well sunk at Kalayanpur, Rs. 69, and another between Paluana and Kalayanpur, Rs. 278; a tank excavated at Mirdad, Rs. 69; and 4 culverts constructed, Rs. 318. The metalling of 3 roads in progress.

In the Gya District.—*Gya.*—A pucca drain at Chanchawra leading to the Khowa ditch constructed, cost Rs. 199; and the erection of a hospital for pilgrims in progress.

In the Shahabad District.—*Sasseram.*—A pucca drain, 3 moveable iron latrines, 4 sheet iron conservancy carts, 3 watering carts, and some pucca roads in course of construction. *Jugdispore.*—A well sunk at Cheratoli, Rs. 74. *Buxar.*—A latrine constructed, Rs 52, and excavation of Douri Shanker tank, and the metalling of Niabazar road in progress. *Doomraon.*—A latrine, Rs. 66, and a culvert, Rs. 374, constructed; and a tank being excavated.

In the Mozufferpore District.—*Mozufferpore.*—Seven roads metalled, the Islampore road widened, and a culvert supplied to it, and a parapet over a bridge on the Worseley road constructed, cost Rs. 2,292. Provision made in the budget for carrying out a drainage scheme. *Hajipur.*—2 Roads metalled, Rs. 607. *Lalgunge.*—Five roads metalled, Rs. 807. *Sitamurhi*—Land acquired and arrangements made for constructing 3 public latrines, and a scheme in hand for providing roadside drains.

In the Durbhanga District.—*Durbhanga.*—Dighi Tank Road metalled, cost Rs. 1,100. A slaughter-house, and the conversion of Boribazar kutcha drain into pucca ones in progress. *Madhubani*—Forty-eight bye-lanes opened out, Rs. 91, and the opening out of 3 others in progress. *Roserah.*—Roads metalled, Rs. 1,011, and 2 roads constructed, Rs. 170

In the Sarun District.—*Chuprah.*—Seven carts (2 conservancy, 1 depot, 1 latrine, 2 watering) and 1 urinal constructed, cost Rs. 333; two D'Abreu's latrines purchased, Rs. 201; one latrine constructed, Rs. 223; 4 iron urinals put up, Rs. 164; and three roads widened, Rs 257 *Sewan.*—Two roads metalled and one of them supplied with drains, Rs 563; and the construction of side drains to the station road in progress.

In the Chumparun District.—*Bettiah.*—A public latrine, cost Rs. 59, and the construction of spill drains to wells in progress. *Motihari.*—One pucca road, 10 kutcha roads

and 10 bridges constructed, Rs. 2,724; 6 roads metalled; side drains to 3 roads provided, Rs. 810; a large tank near the cutchery excavated, two latrines constructed near serai, and a Municipal market opened out.

In the Monghyr District.—*Monghyr.*—Reservoirs constructed near Municipal wells, cost Rs. 64; 5 culverts put up to improve waterways in different parts of the town, Rs. 274; and Puranigungo road metalled, Rs. 613. *Jamalpore.*—Four sweeping carts provided, Rs. 220; a pucca well sunk, Rs. 148; and 2 pucca latrines with corrugated iron roofs in course of construction.

In the Bhagulpore District.—*Bhagulpore.*—Six roads metalled, Rs. 2,663; the Soojagunge drainage scheme completed, and the water-works commenced. Metalling of a road and cutting a nullah in progress. *Colgong.*—A cutcha thatched latrine for males and females constructed, Rs. 55.

In the Purneah District.—*Purneah.*—Two latrines constructed near the Civil and Criminal Courts; the Lalbag and Line bazar drainage improved, cost Rs. 278 The former is yet in progress. A canal excavated through the civil station.

In the Maldah District.—*English Bazar.*—A pucca drain in Kallitollah 1st lane, Rs. 389; a toll tree bridge in the South Strand Road, Rs. 400; a large conservancy cart, Rs. 37; and 31 temporary latrines, Rs. 93, constructed. *Old Maldah.*—Drainage works undertaken in 3rd section Sarban road, Rs. 258; and the same road metalled, Rs. 124.

In the Sonthal Pergunnahs District.—*Deoghur.*—A large tank excavated, Rs. 267, and sinking of a well in progress. *Sahebgunge.*—Five pucca drains constructed, Rs. 673.

In the Cuttack District.—*Cuttack.*—Stone flooring to Dolundha slaughter-house provided, cost Rs. 262; Samia Talow drainage, Rs. 512; Thoria Sahi drain branch No. 1, with masonry bridges, Rs. 614, and a masonry bridge on Puri roadside main drain, Rs. 50, constructed; 7 urinals put up near kutcherries and main bazar, Rs. 23; night-soil depot at Gossain Bagichha constructed, Rs 44; house in Municipal market, Rs. 439; three kutcha roads, Rs 362, and one pucca road, Rs. 121, constructed; 3 roads widened, Rs. 705. *Kendrapara.*—Two roads metalled, Rs. 465, and the metalling of another in progress. *Jajpur.*—A road metalled and a drain excavated.

In the Puri District.—*Puri.*—One urinal put up near the Magistrate's kutcherry, cost Rs. 60, and the construction of two latrines for females, 4 urinals, a pucca drain near Dolebedi, and an experimental well in progress.

In the Balasore District.—*Balasore.*—The construction of a slaughter-house in progress.

In the Hazaribagh District.—*Hazaribagh.*—A well sunk in the slaughter-house compound, cost Rs. 145, and the main nullah improved, Rs. 589. *Chatra.*—One road and three culverts constructed, Rs. 515, and the construction of a Municipal market and of a road in progress.

In the Lohardugga District.—*Ranchi.*—A public latrine erected and some conservancy carts purchased; drains excavated, cost Rs. 50, and roads metalled, Rs 2,731.

In the Singbhum District.—*Chyebassa.*—Trees planted on roadside, cost Rs. 54.

In the Manbhum District.—*Purulia.*—Stone pitched drains, cost Rs. 529, and a range of pucca buildings in the Municipal market, Rs. 1,817, constructed.

IN DISTRICTS.

Burdwan.—Rs. 12,377 were expended on road works and bridges As relief works in tracts in the district where distress on account of scarcity was felt, roads were constructed at a cost of Rs. 718 and village roads improved for Rs. 9,065. Government also granted Rs. 5,000 for the improvement of the water-supply in the distressed tracts, and Rs. 20,000 for roads. Of the former amount Rs. 2,479 were expended, and of the latter Rs. 4,223. In addition, Rs. 30,000 were advanced under the Land Improvement Act to landholders and superior tenants for cleaning and deepening old and silted up tanks and excavating new ones.

Bankura.—Forty-three village roads were provided in different parts of the district, which have, it is stated, vastly improved the sanitation of the villages in which they were constructed by draining off stagnant pools of water, filling up hollows, and removing noxious vegetation.

Birbhum.—The Subdivisional Officer of Ramporehaut had, by employing the Railway engine and pipe, several tanks in his head-quarters filled with water from a small stream which had been bunded up by the Railway Engineer for conveying water to the Railway tanks. Of the cost incurred (Rs. 526) Rs. 400 were given by Government and the balance was raised by subscription. But for this timely supply the people would have suffered severely. Seventeen tanks were excavated at a cost of Rs. 8,689 as relief works during the scarcity. These tanks will supply drinking water to, and, by being used for irrigating the paddy fields, afford food for the people.

Midnapore.—Three tanks and two wells were excavated, two bunds repaired, a drainage channel provided, a gap filled up, &c., in the Government khas mehals at a cost of Rs. 20,283. Village roads were constructed, or were in course of construction in several localities in the Sudder, Contai, Tumlook and Ghatal subdivisions. The total cost amounts to Rs. 6,268. The road or bund connecting the terminus of the Midnapur High Level Canal with the Cuttack Trunk road was widened and metalled at a cost of Rs. 8,803, and a district road

from Pingbani to Sabong was constructed at an expenditure of Rs. 1,840. Fourteen tanks were excavated, and nine reclaimed by private individuals at a cost of Rs. 5,108.

Hughli.—Two tanks were excavated by Baboo Joy Krisna Mukerji of Utarpara near the Nalikul and Tarkessur Railway station at a cost of Rs. 500. Two tanks were re-excavated, one by Durga Dass Chuckrabutty near Champdany, cost Rs. 200, and the other by Kalu Mundul near Ramnagore, cost Rs. 300.

Howrah.—Several roads and bridges were constructed in the Uluberia town and thana at a total cost of Rs 6,526. It should be mentioned that this amount includes cost of repairs, which has not been furnished separately.

24-*Pergunnahs.*—A culvert was constructed on the Culpee road, cost Rs 150, and a portion of the road from Nimta to Gouriapur was metalled, cost Rs. 1,000, contributed by the North Dum-Dum Municipality. A widow named Jaga Bewah excavated a tank at Lackhi Kantapur in Diamond Harbour sub-division, cost Rs 300 or 400, for the supply of drinking water, and Moharajah Kamul Krishna Bahadoor contributed Rs. 400 for the clearance of the Khurdah Khal.

Nuddea.—The masonry superstructure of the Kanyedanga bridge on the Meherpore and Kanyedanga road was completed, and the necessary iron work and timbers required for it was collected, cost Rs. 290, but the bridge could not be completed. Village roads in the Sudder, Ranaghat, Chuadanga, Meherpur, and Kushtia subdivisions were constructed, or the existing communications restored, cost Rs. 6,730. These works improved the sanitary status of the villages in many ways. In the construction of the roads many bad holes and low level areas in which water used to lodge were filled up, jungle was cleared, and in many cases passages for discharge of village drainage were opened. In the Sudder sub-division most of the works formed famine relief works. Heavy earthwork was executed for relief purposes on the three unfinished famine roads (commenced in 1874) of Chapra to Tehatta, from Kaligunge to Meera, and from Bikrampore to Golipara, cos tRs. 3,175. Twenty-two tanks were re-excavated in the Ranaghat subdivision, which tended to improve materially the supply of water, both for drinking and culinary purposes. The silted up mouth of the Choorny at the point where it had originally discharged itself into the Ganges was opened. A number of tanks were excavated by private individuals, particulars not furnished.

Jessore.—A tank was excavated by Sristi Dhur Mundul at village Harishpur in the Bongong sub-division at a cost of Rs. 700.

Khulna.—Some tanks were dug by private individuals, which no doubt benefited sanitation, but particulars regarding them have not been furnished

Dinagepur.—The drainage canal was maintained by the Road Cess Department at a cost of Rs. 699, and several bridges with sufficient waterway were built in the south on the road between Mohadebpore and Sultanpore station of the Northern Bengal State Railway.

Rajshahye—A road in the Manda police station, cost Rs. 400, a road from Nattore to Amhatee, cost Rs. 700, and a road from Panchbibi to Sahebgunge, were constructed. Drains to the last-named road have not yet been supplied. The zemindar of Poothia opened the mouth of the silted up river at Nundragachi to allow of the Pudda water being let into it. By this means the country was flushed with fresh water, the public health and agricultural prospects being benefited thereby. The following tanks were excavated by private individuals. One at Nattore cost Rs 1,500, 1 at Bhootma cost Rs. 1,100, 3 at Bandaikhara cost Rs. 792 and Rs. 600 respectively, 2 at Lalpore cost Rs. 875 and Rs. 600 respectively, 2 at Charghat cost including 10 old ones re-excavated Rs 4,275, and 8 at Bagmara cost Rs. 4,000. Two hundred and seventy-three pucca wells and 557 kutcha ones were sunk in the district, bringing up the total wells in the district to about 6,812. These wells, the Magistrate says, were chiefly made in the Barind country, where the soil is suitable, from fear of want of drinking water in the hot months, as the tanks had all but dried up owing to the scanty rainfall of the past few years.

Bogra—In 7 villages in the Jaipur Government Estates situated in thana Panchbibi, 7 wells, provided with parapets, were sunk, and village roads constructed, which, considering that this part of the country is covered with thick jungle, will prove beneficial in a sanitary point of view. The remaining portion 5½ miles of the Dupchanchia road was completed, cost Rs. 2,000. Thirty-five bamboo culverts were constructed on 5 roads in different parts of the district; and 2 tal wood bridges were constructed on the Sultangunge-Adamdighi and Khetlal-Surhatty roads.

Pubna.—The tract from Hondyal to Tarash about 8 miles was raised. Many other tracts were also raised, but not sufficiently to stop drainage and to be above flood level. A road about 2 miles in length in village Potajea, and another about ½ long in village Tarash were constructed. Four tanks were dug by private individuals at different places at a cost of Rs. 5,300, and wells are to be sunk in the Government Estates in Tarash.

Darjiling.—Scavenging establishment was provided for 11 bazars in the district at a cost of Rs. 564. Miscellaneous improvements were effected in the large bazar in the Terai, cost Rs. 395. The drainage of Siliguri was improved, cost Rs. 151. Improvements were effected to the water-supply of Kalimpong, cost Rs. 167, a new burial ground was established at Kalimpong. Trees were planted in Siliguri in the Terai in the neighbourhood of Darjiling and Kalimpong, cost Rs. 427.

Julpaiguri.—The Chalsa road was constructed by private subscription and a grant from the Estates Improvement Fund.

Faridpore.—Several village roads were constructed, and 11 tanks were excavated in several parts of the district by the Road Cess Department, cost Rs. 3,650. Eleven tanks were also dug by private persons at a total expenditure of Rs. 3,196.

Backergunge—About 81 roads were constructed at a cost of Rs. 38,711, and a tank, cost Rs. 100, and eight khals, Rs. 1,486, were excavated.

Mymensing.—A tank was excavated at the Bhagalpore village in thannah Bazitpore, cost Rs. 200, and two in the Government Kashmahal, Tuppah Nickli, cost Rs. 686 and 270 respectively, and an old tank in the same village was re-excavated, cost Rs. 131, and a few roads were constructed.

Noakhali.—Sixty-one iron and other bridges were in course of construction in different parts of the district, estimated to cost Rs. 7,493.

Tipperah.—A khal from Chur Ranpore in thannah Chandpore was excavated at a cost of Rs. 266; a tank was dug by the ward's estate of Ashutoshnath Roy, a zemindar of Serail in Brahmenberiah, cost Rs. 435. Opening out of silted up watercourses in pergunnah Gangamandal and Patikara north of Comillah in progress. The following works were executed by private individuals. A khal extending to two and a half miles from Ramchandrapore to Daikata river in thana Laksham, cost Rs. 520, exclusive of works of a similar nature estimated to cost Rs. 10,000 now in progress. Four tanks in thana Laksham and five in thana Hazigunge, cost Rs. 3,745.

Patna.—Sixteen culverts and four bridges, cost Rs. 2,200, and one road from Rajgir to Banganga, Rs. 275, were constructed in the subdivision of Behar, and another road was in course of construction.

Gya.—A number of roads was constructed, details of which have not been furnished.

Shahabad.—Various improvements had been and were being effected (for details see paragraph—of the Report) in the Government Estates in the Sasseram subdivision, and in the town of Nassriganj belonging to Government, cost already incurred Rs. 1,414.

Durbhanga.—Some roads were metalled, and several small tanks were excavated in different parts of the district by private individuals, but these tanks are considered to be of very little use, as in the course of a few years they are sure to become repositories of stagnant and foul water.

Sarun.—Several district roads were metalled and bridged, and the unmetalled main and village roads were improved. Seven pucca wells were sunk in different parts of the district from loans advanced under Act XIX of 1883. The railway authorities opened now culverts or barrel drains through the B. and N. W. Railway embankment running through the district.

Chumparun—Three roads were constructed and some tanks excavated, and a great many wells sunk by private individuals as outlets for private charity.

Monghyr.—Seven roads were constructed, one old tank was excavated by the owner, cost Rs. 419, and six tanks were excavated by private individuals, cost Rs. 2 350.

Bhagulpore.—In the Sudder subdivision sections I and II of Ghôgha-Assi road were bridged, the embankment of the former was raised, and the latter was otherwise improved, cost Rs. 10,284. The waterways were taken in hand, cost Rs. 6,563. In the Banka subdivision a bridge was restored in the road from Bhagulpore to Sonthal Pergunnahs, Rs. 3,718. In the Mudhepurah subdivision a bridge on the Mudhepurah-Sonbursa road was restored, and waterway provided, Rs. 2,496. In the Supol subdivision a semi-permanent bridge on the 72nd mile road was restored and some wooden bridges were constructed. In Mudhepurah a ryot named Gunga Kumar excavated a tank at a cost of Rs. 400 for drinking water for the people and cattle.

Purneah.—Thirty small culverts by Ranigunge pipes have been supplied at Kishengunge, and the Khagra Raja has metalled the road constructed by him leading from his house to the Ganges and Darjiling road. This Raja has sunk three wells for the use of the people who resort to the Weeke's mela, which is held a mile from the boundaries of Kissengunge and Khagra towns. A bridge across the Ganges and Darjiling road was constructed.

Maldah.—Roads were metalled, cost Rs. 360; kutcha drains constructed, cost Rs. 316; and bridges erected, Rs. 925. Roads from Bamangola to Nityanundpore, 18 miles, cost Rs. 4,809, and from Gumashtapore to Nachole, 12 miles, cost Rs. 3,233, were constructed; eight tanks were excavated in villages in different parts of the district by private individuals, cost Rs. 3,330.

Cuttack.—The opening of the canal from Jajpore to Akhuapada was commenced, but the work was stopped owing to financial pressure.

Puri—A large number of wells, tanks, some causeways, and two bunds were constructed in different parts of the district. These works were executed by Government from the provincial and imperial revenues, and are calculated to improve the sanitation of the places in which they are situated. Two tanks were excavated by private individuals, and three wells sunk by the Magistrate from the Jaganath Road Fund on the Jugurnath road for supplying good water to pilgrims especially. Two sheds were erected in Gope station by some zemindars for the use of travellers. The excavation of some tanks was in progress at the close of the year in the famine-stricken tracts of Parikud, Molud and Bagrakat with a view to provide work for the distressed people in those parts. These tanks when completed will improve the sanitary condition of the neighbouring villages, which, owing to their situation on the Chilka lake, become unhealthy owing to deficiency of water in certain seasons of the year.

Hazaribagh—Some district and village roads were constructed.

Manbhoom.—The main bundh in Katras, and other less important reservoirs were completed. The Katras bund is a fine sheet of water, but it is to be regretted that in its basin a number of trees has been left. Five wells were being sunk in the camping ground at Govindpore, Rajgunge, and Topchanchi. These are of course intended primarily for the use of troops, but they will also be very useful adjuncts to the existing water-supply of the localities.

APPENDIX No. IV.

ABSTRACTS OF INSPECTION REPORTS ON TOWNS VISITED IN 1885.

Abstracts of Inspection Reports on Towns visited in 1885.

Balasore Town.—*Inspected in January* 1885.—The sanitary arrangements of this town were not satisfactory. There were many grave sanitary defects specially under the head of water-supply. The town was full of pits, hollows, and irregular surfaces, which contained stagnant water and tended to keep the houses round about them damp, and so proved injurious to health. Want of funds did not permit the Commissioners to execute during the past year any original sanitary works.

The suggestions were—(1) To devote annually a considerable portion of the saving effected by the municipality having been relieved of the Police charges, to improve the sanitation of the town. (2) To bring into operation Parts VI and IX of the Municipal Act, as the Commissioners ought to possess specific powers to prevent the irregular construction of houses, privies, and drains, and to keep privies clean. (3) To endeavour to get the numerous pits, hollows, and irregular surfaces filled up. (4) To prohibit the making of excavations for taking earth for building purposes, &c. (5) To put up lights, in the first instance at places where their want is most badly felt. (6) To plant trees on the sides of the principal roads as they serve many useful purposes. (7) To attend to the levels of the kutcha drains as they are defective at places. (8) To provide more pucca roadside drains as funds permit. (9) To raise pucca platforms around the public wells so that soakage of water in their vicinity may be prevented. (10) To provide all the wells with metal buckets and chains for drawing water. (11) To plant no new trees on the banks of tanks, and to remove some of those already existing. (12) To pay a good deal of attention to tanks generally, as the severe outbreaks of cholera common in the town indicate an impure water supply. (13) To put a stop to the practice of defæcating on the banks of the Buribalung river and the Nunijuri khal, from which drinking water is taken. (14) To have the lanes and bye-paths daily swept and cleaned. (15) To construct more public latrines at such places as the kutcherries, markets, serias, &c., which are much frequented by the people. (16) To have the trenches for burying night-soil dug in long lines, shallower and closer together, and one foot wide by one foot deep. Also, after one part of the ground is well manured, to get it cultivated. (17) To open more trenching grounds as the present one is not conveniently situated with reference to the different night-soil depots. (18) To prevent the incomplete disposal of night-soil from private privies by private mehters, and to bring to justice the offenders in all such cases. (19) To have the gumlahs and drains of the public latrines tarred twice a month, also to treat similarly the walls of the corrugated iron latrines for about two feet from the ground to keep the iron from corroding. (20) To introduce in the town Part IX of the Municipal Act as soon as possible. (21) To prevent promiscuous defæcation as much as possible, and thereby make an advance towards cleanliness of the town. (22) To attend early to the subject of closing the Ossanund burial-ground which is crowded. (23) To see that bodies are buried in lines to save space, and to allow the ground to be used in regular and systematic order. (24) To bury Mahomedan and Christian pauper dead. (25) To plant the old burial ground with trees as the roots of living plants shorten the period of decay, absorb the products of decomposition, and thus prevent the escape of deleterious gases (26) To appoint persons to supervise the process of cremation at the burning ghâts. (27) To get the clothes and pillows of the dead burnt invariably with the body to prevent the Domes taking them to the bazar for sale and thus helping the spread of contagious diseases. (28) To require the owners of the Mundle and Chandni markets to rectify the defects in connection with those places. (29) To provide the Naya bazar, which is frequented by pilgrims on their way to Juggernath, with a good well or tank : if the former, to have it well protected and supplied with buckets and chain. (30) To lose no time in providing the town with a slaughter-house. (31) To get all the bones removed from the vicinity of the butchers' shops by the municipal mehters, and to make every endeavour to maintain cleanliness. (32) To bring the provisions of the law to bear upon such persons who get themselves inoculated if they return to town with the vesicles on them. (33) To perform vaccination in four points on the upper arm in all children over four months old, and to transmit the lymph from arm to arm

Action taken on the suggestions—(1) Steps have been taken to introduce Parts VI and IX of the Municipal Act into the town. (2) The planting of trees on the roadsides is being most actively carried on. (3) The owners of trees on the sides of tanks have been required to cut down all overhanging branches. (4) The drains have been well attended to, and are being gradually improved. (5) The owners of the Chandni and Mundle bazars have been ordered to rectify the defects in those places. (6) Steps have been taken to prevent the incomplete disposal of night-soil from private privies. (7) Regarding the suggestions to have the numerous pits, hollows, and irregular surfaces filled, and to re-excavate one or two tanks, it is stated that the municipality is too poor to give effect to them.

Cuttack Town.—*Inspected in January* 1885.—The sanitation of this town was not quite satisfactory. The drainage arrangements were defective, and those for the supply of water for drinking purposes were no good. Since the town was last inspected in 1879,

much had been done to mend matters in these directions and to improve generally its sanitary status. On the date of my visit, there were evidences to show that its sanitary welfare was being cared for by the Commissioners.

The suggestions were—(1) To take steps to obviate the recurrence of the diminution of the income which is a very serious matter. (2) To utilize the sections of Part VI of the Municipal Act III (B.C.) of 1884 which relate to building regulations, and to prevent the crowding together of huts in the *bustis* without proper provision for ventilation or passages between them. (3) To look after the filthy condition of the surroundings of houses complained of, as it tends to vitiate the atmosphere. (4) To largely use street sweepings and the refuse from private houses in filling up the foul pits, hollows, and excavations which abound within the limits of the municipality, and which form so many centres of cholera and other diseases. (5) To improve the condition of the side drains that are for the most part kutcha and liable to be silted up, and to attend early to the subject of providing good pucca side drains to streets. (6) To try to remedy the unsatisfactory state of the drains in private houses. (7) To insist on the strict observance of sections 202 and 204 of the Municipal Act, and to get all obstructions or encroachments in or on any road or open drain removed at the cost of the offender. (8) To take precaution to prevent soakage around and in the vicinity of the municipal and other wells. (9) Not to allow the construction of any privies, urinals, &c., within 50 feet of any public tank or water-course. (10) To prevent the throwing of corpses or carcasses into the river, and to bring the offenders to justice. (11) To consider the feasibility of undertaking a water scheme by raising a loan and seeking assistance from Government and subscriptions from wealthy residents. (12) To have all the streets as well as the lanes and bye-paths swept daily. (13) To discourage the practice of throwing rubbish on plots of ground behind houses. (14) To provide more public latrines as the present number is insufficient for the requirements of the town, and to construct them near kutcherries, markets, serais, fairs, and other places much resorted to by the lower orders of the people. (15) To adopt measures to increase the number of pucca latrines. (16) To have the gumlahs, drains, and the walls of public latrines tarred at least twice a month. (17) To increase the number of public urinals and to erect them at convenient parts of the town. (18) To prevent as much as possible the practice of promiscuous defæcation. (19) To put down at once the practice of throwing night-soil here and there by some of the private mehters. (20) To suppress the few well-privies there are in private houses. (21) To open more trenching grounds for the convenience of the various night-soil depôts, and to have the trenching grounds regularly cultivated. (22) Considering the filthiness of private privies, to bring into operation Part IX of the Municipal Act, and, pending its introduction, to properly look after the private privies in the town in view to their being kept clean. (23) To encourage as far as possible the practice of using phenyle for disinfecting public latrines and urinals. (24) To provide such localities as Mohendipur, Juggernathbullab, Daluram Misser's Lane, Uriya Bazar, &c., with proper drainage and roads, and with ample latrine accommodation, and to see that the houses in these localities are so constructed as to permit free ventilation. (25) To have the slaughter-houses sufficiently flushed with water and the cess-pools properly cleared out daily. (26) To keep the slaughter-houses scrupulously clean so that no offensive smell at any time be perceptible in them. (27) To have the Keserpore slaughter-house enclosed with a wall. (28) To close, under the provisions of the law prescribed for the purpose, the Kuddum Russel burial-ground, which is situated in the heart of the town, and is very crowded. (29) To see that the graves in the Mahomedan burial-ground are dug in rows and at least 6 feet deep. (30) To plant all the burial-grounds with trees as the roots of living plants shorten the period of decay, absorb the products of decomposition, and thus arrest the escape of noxious emanations. (31) To see that all the clothes and pillows of the dead are burnt with the body, and not to allow the washermen to take them away and sell them in the bazar, as this practice is likely to cause contagious diseases to spread. (32) To utilize fully the provisions of the Compulsory Registration Act, and to adopt measures generally for improving registration.

Action taken on the suggestions.—(1) More public latrines are being provided. (2) The people are being induced to improve the drainage arrangements inside their houses and engage municipal mehters for cleaning their cess-pits. (3) Steps have been taken to increase the number of conservancy carts. (4) Urinals are being put up near the kutcherry, the principal bazars, and other parts of the town.

Puri Town.—*Inspected in January and February* 1885.—Although the financial position of the municipality had improved very considerably since it was last inspected in 1880, its sanitary arrangements were not such as could have been desired. There were many sanitary defects, particularly the arrangements under the heads of drainage and water-supply were not satisfactory, and, in some instances, objectionable. Much had been done to improve the sanitation of the town, but much more remained to be done. It appeared that the Commissioners were taking much interest in the sanitary welfare of the town.

The suggestions were—(1) To increase the length of mileage lighted as funds will permit. (2) To utilize the sections of Part VI of the Municipal Act, which relate to building regulations, as the improper laying out and construction of buildings lead to great evils. (3) To carefully look after the conservancy of the narrow lanes so that they may not become receptacles for all sorts of filth and offensive matter of the neighbourhood. (4) To supply the roads with side drains and with sufficient waterway. (5) To carry out to completion as soon as practicable the drainage scheme which has been taken in hand. (6) To connect the house drains

with the side drains of the streets so as to discharge into them, and to get the offensive cess-pits built into the plinths of pucca houses filled up with blocks of laterite. (7) To construct feeder drains to the main drainage system which is now in course of construction, so that complete and rapid drainage may be effected. (8) To have the outlet intended to carry off the stagnant water of the Markanda tank, which is choked at its further end, cleaned, so that as fresh water runs in the foul water may run out. (9) To put another ring of laterite stone round the mouths of the wells so that in bathing water may not splash back into them. (10) To analyse the water of some of the wells in the crowded quarters that are in a foul state, and to close them if the water is found to be bad. (11) To use invariably buckets and chains in raising water from the wells. (12) To provide some more wells near the pilgrim tanks as at times the gathering is enormous, and to warn people against drinking foul tank water and to encourage them to use that of the wells. (13) To consider the feasibility of, and with that view to take professional advice with regard to a scheme for the proper supply of drinking water for the town. (14) Not to allow owners of houses to accumulate rubbish behind their houses, but to compel them to place it at appointed places for removal. (15) To provide more public latrines as the present number is inadequate for the requirements of the town. (16) To provide trench latrines surrounded with mat enclosures for the pilgrims near their morning bathing place, so that defæcation all about the town, and specially near the margins of tanks, may be prevented Also to compel the pilgrims to resort to them whenever they are present in numbers in the town. (17) To take steps to prevent promiscuous defæcation, and to induce the people to use the public latrines. (18) In constructing public latrines to have the accommodation for females entirely separate from that for males, in different enclosures with different entrances. (19) In addition to the gumlah for fœces, to provide another gumlah in each cell of the latrines for urine and washings, and to have the gumlahs, the drains, and the walls of the latrines up to three feet high tarred at least twice a month. (19) To carefully carry out the dry earth system in the public latrines (20) To introduce Part IX of the Municipal Act for the better control of the private privies. (21) To consider the subject of constructing a proper municipal market on an approved plan. (22) To have the Mahomedan burial-ground enclosed by a wall. (23) To exercise proper and legitimate supervision over the sale of the Mahaprasad or holy food, as its consumption, if bad must be very injurious to the health of the pilgrims. (24) To consider carefully the question of the uses to which the Puri Lodging-house Fund might be put. (25) Not to employ the municipal vaccinators outside the limits of the municipality. (26) To prosecute under the prohibitory law such persons as get inoculated and return to town with the vesicles on them. (27) To introduce into Puri the *hath-chitti* (hand-book) system which is in force in other districts, for registering births and deaths. (28) To fully utilize the provisions of the Compulsory Registration Act. (29) To specially appoint a person to detect and report evasions of the provisions of the law by the people, and to punish the constables under section 6 of the enactment whenever they omit to report the births and deaths occurring in their beats. (30) To induce the midwives to report all births at which they attend.

Action taken on the suggestions.—(1) Twenty-five new lights have been put up at different places. (2) The roads are being gradually provided with side drains. (3) The offensive cess-pits built into the plinths of pucca houses are being dealt with (4) Arrangements have been made for the excavation of an experimental well by the District Road Committee of Puri. (5) The overseer has been instructed to inspect as often as possible the lodging-houses and other dwelling places, and cause the rubbish collected therein, or on lands attached thereto, to be removed without delay. (6) Four public urinals and two public privies are being constructed. (7) Temporary privies and urinals with mat enclosures will in future be provided for the pilgrims at the time of the festivals. (8) The gumlahs, &c., of the public latrines will be regularly tarred, and a cask of coal-tar has been purchased for the purpose. (9) The dry-earth system has been introduced in the public latrines. (10) Steps have been taken to introduce Part IX of the Municipal Act. (11) The Commissioners, who are monthly deputed to inspect the temple, have been requested to examine and superintend the sale of the Mahaprasad or holy food. (12) Steps have been taken to detect and prosecute those who get themselves inoculated outside the town, and return to it with the vesicles on them.

Krishnaghur Town.—*Inspected in February* 1885.—Krishnaghur appeared to be a neglected place, which, though the seat of a college and inhabited by educated people, had made no advance in sanitation, but where, on the contrary, grave sanitary defects existed, particularly in connection with its conservancy, drainage, and water-supply. What little improvement had been effected appeared to have been brought about through the exertions of Major Ramsay and of Dr. Murray. The Commissioners were not evincing that interest in the sanitary welfare of the town, which could have been expected of them.

The suggestions were—(1) To employ the whole of the amount become available by the municipality having been relieved of the Police charges, and, in addition, to devote annually a legitimate share of the remaining income, for placing the town on a sound sanitary footing. (2) To pay greater attention to the subject of filling up pits and hollows, and to utilise for the purpose in the cold season the sand from the dry bed of the river (3) To consider the advisability of raising a loan to meet the cost of providing proper drainage for the town. (4) To adopt means for increasing considerably the water-supply of the town. (5) To have the new tank in Ward No. properly constructed and cared for, as it would

afford a supply of drinking water to the neighbourhood where it is much required. (6) To provide all the public wells with buckets and chains, and to prevent the indiscriminate use of private vessels for the drawing of water. (7) To have the whole town thoroughly swept, and the sweepings and rubbish utilised by filling up the numerous pits, hollows, &c., about the town (8) To consider the question of the pay and horse allowance of the conservancy overseer and of the insufficiency of the conservancy establishment. (9) To get all lands, used for the purpose of being manured by Major Ramsay's treble-seated movable latrines, cultivated to ensure purity of soil. (10) To see why the pucca public latrine beside a municipal shed at the corner of the Rajbarry moat was not in use. (11) To provide more public latrines so that promiscuous defæcation may be obviated. (12) To make every endeavour to suppress the well-privies (13) To introduce Part IX of the Municipal Act to control the arrangements connected with private privies. (14) To have all the night-soil trenched and to have the trenches dug one foot deep instead of 18 inches. (15) To consider the subject of establishing a municipal market as soon as funds are available for the purpose. (16) To take steps for the early extension to the town of the different sanitary sections of the new Municipal Act, and to have them not only introduced, but stringently enforced

Action taken on the suggestions.—(1) The obstructions to the pucca drains are being gradually removed. (2) The municipal tank in Ward No. 3 has been excavated. (3) River water was introduced into almost all the important tanks (4) Three new wells have been sunk in Wards Nos 3, 4, and 5 respectively. (5) All the public wells will be supplied with buckets and chains for drawing water. (6) The water-supply will be considerably increased next year (*i.e.* 1886), when some old tanks are expected to be dug out by private individuals, Moharani Surnamoyee, Babu Nuffer Chandra Pal Chowdhery, and the Manager of the Nuddea Maharajah's estate each having promised to excavate one tank, and the owners of some tanks in Ward No. 4 having also made similar promises. (7) The conservancy establishment has been largely increased, and a sub-overseer has been appointed to help the overseer in properly discharging his duties. (8) Steps have been taken to carry out the trenching system properly. (9) All the well privies will be suppressed very soon.

Jessore Town.—*Inspected in February* 1885.—The sanitation of this town was not satisfactory. There were grave sanitary defects in existence, particularly under the heads of conservancy and water supply which demanded early attention. Since the municipality was last inspected in November 1881, very little had been done to improve its sanitary status. The Commissioners were not displaying that interest in ameliorating the condition of the town, which might have been expected from them.

The suggestions were.—(1) To allot annually an adequate share of the income to improve the sanitary status of the town. (2) To move Government to extend the provisions of those parts of the Municipal Act which have not yet been brought into operation in Jessore. (3) Not to permit in future the construction of such sunshades and shop-platforms as are thrown out beyond their proper aligument and form great encroachments on the width of the streets. Also to endeavour to have the existing ones removed. (4) Not to permit any new excavations for brick-making within municipal limits. (5) To have the small swamp at the back of the District Superintendent's house filled up with sweepings and earth. (6) To have the jungles near the houses and specially near the Chandna Rajbarry uprooted, and the house enclosures kept permanently clear of it. (7) To attend to those pucca bazar drains that are in very bad repair. (8) To present the shop-keepers from placing planks or boxes on, or erecting platforms over, the drains, and to have the existing encroachments removed at the cost of the owners. (9) To induce the people to remedy the very defective condition of the house drains. (10) To have all the tanks that are set apart for drinking purposes cleaned out, specially the Laldighi which has not been touched for the last ten years. To have all these tanks re-dug and to adopt measures for preventing the entry of surface drainage into them, and, as far as possible, to have the trees on their banks removed. (11) To consider the advisability of having the small private tanks which are far too numerous, and are also in very bad condition, filled up. (12) To have the new tank at Sankerpore set aside for drinking only, and to acquire the Gohatta tank, which is private property, and get it reserved for the same purpose. (13) To prevent defæcation on the banks of the river Bhoirub, and the throwing of corpses into it, and to deal with the offenders according to the provisions of the law. (14) To increase the conservancy establishment and the number of carts, and to appoint an overseer to supervise the work properly. Also to see that the overseer defines the work of each man and takes that work from him. (15) To have the streets and lanes swept daily and surface cleansing generally and closely attended to. (16) Not to permit the accumulation of rubbish about houses in the bazar, and to compel the owners under the law to put it out on the streets or other appointed places for removal by the municipal carts. (17) To provide year by year additional latrines, and to construct one as soon as possible at Purana kusba. Also to have the buildings for females entirely separate from those for males in different enclosures and different entrances. (18) To have the dry-earth system persevered with in public latrines. (19) To have the gumlahs as well as the drains and the walls of the public privies to the height of about two feet from the floor, tarred at least twice a month. (20) To endeavour to put down promiscuous defæcation. (21) To carry out the trenching system properly, the trenches being shallower than at present, not more than one foot deep and one foot wide, and dug in straight lines. Also to have the second trenching ground regularly cultivated. (22) To have the trenching grounds properly fenced and thereby protected from the inroads of the pigs which frequent them. (23) To consider the advisability of removing the pigs outside municipal

limits. (24) In the Birandi burial ground to have the bodies buried in lines to obviate waste of space. (25) To have the graves dug sufficiently deep to prevent jackals unearthing the bodies. (26) To attend carefully to the conservancy of the bazar, and to appoint a special sweeper to look after its cleanliness. (27) To compel the owner of the slaughter-house to correct as soon as possible the defects that were pointed out. Also to provide the place with a cemented drain with proper levels so that blood and washings may easily run into a cemented trough, whence it could be removed daily by the conservancy carts. (28) To consider the advisability of establishing a municipal market and a slaughter house. (29) To fully utilise the provisions of the Compulsory Registration Act which is in force in the Jessore town.

Action taken on the suggestions.—Some of the suggestions have been adopted and certain others are considered very good, and will be carried out as far as the funds permit. Regarding the observations anent registration of births and deaths, an extract from the report will be sent to the District Superintendent of Police.

Khulna Town.—*Inspected in February* 1885.—This town is composed of a narrow strip of land on the west bank of the Bhoirub river, with the new railway premises towards its northern and the civil station to its southern extremity. Formerly Khulna was a petty station, but about three years ago it was converted into the head-quarters of the Khulna subdivision, and towards the close of the last year it was constituted a municipality, and the Municipal Act III (B.C.) of 1884 extended to it; but the municipality had not got into proper working order, and its income was very small, so that the various sanitary provisions of the Act could not be utilised in their entirety. There were many grave sanitary defects in existence. The drainage and conservancy arrangements were altogether unsatisfactory, and those regarding the disposal of the dead were in many instances very objectionable. A scheme for the drainage and laying out of the town was under consideration, and would no doubt receive the serious attention of the Commissioners.

The suggestions were—(1). To attend, in the first instance, to the proper laying out of the town, as on this will greatly depend its health and consequent prosperity. (2) Not to lose sight of the necessity for extending to the town the omitted parts of the Municipal Act, and, as soon as the municipality is in a position to do so, to utilise the sanitary regulations, particularly those contained in Part IX relating to latrine arrangements. (3) To attend first of all to the subject of improving its financial position, so that a sufficient income may be realised and a fair share of it be available year after year for placing the town on a sound sanitary footing. (4) When new roads well laid out with proper side drains are constructed, not to allow them to be encroached upon. (5) To construct a good metalled road along the river bank both for the comfort of the people and for the proper commercial development of Khulna. (6) To gradually fill up all pits and excavations, and not to permit any new excavations for the purpose of taking earth for house plinths. (7) To allow householders to remove the earth that will become available in digging tanks for water-supply for use in raising plinths. (8) To prevent the construction of new huts without any regularity and quite irrespective of ventilation, facilities for scavenging, &c., and to fully utilise, when brought into operation, the sections of Part VI of the Municipal Act which relate to building regulations. (9) To make provision in the scheme for the improvement of the drainage of the town to connect house drains with the city drains as their present condition is very bad. (10) To excavate a new tank for the supply of good drinking water in the brickfield near the new kutcherries, and to acquire one of the best tanks in every village and to have it enlarged and reserved for drinking only. (11) Not to plant trees near drinking water tanks, nor to make the banks too high. (12) To prevent the people from fouling the banks of the river and of the tanks from which drinking water is taken. (13) To enlist a proper establishment with a sufficient number of carts for the efficient carrying out of the conservancy arrangements of the town. (14) Not to allow rubbish to collect on house lands, but to get all brought out for removal, along with the street sweepings, by the conservancy carts and daily employed in filling up holes and excavations. (15) To have, in addition to the streets, the lanes and bye-paths swept, wheel-barrows being employed where carts cannot have access. (16) To construct public latrines both for males and females at places which are most frequented by the people, particularly in the bazar. (17) To have the latrines for females quite distinct from those for males in separate enclosures with different entrances, and attended to by mehtranis only. (18) If pucca latrines are not built in the first instance, to have the flooring of the latrines made pucca, and to consider the advisability of using corrugated iron for walls. (19) To use two gumlahs in each cell of the latrine—one for the fæces and the other for washings, and to get these gumlahs, the drains, and the walls up to two three feet high tarred at least twice a month. (20) To acquire cultivable land, if possible, outside the limits of the municipality for the purpose of burying the night-soil. (21). To remove the night-soil from the public and private privies twice daily to these grounds, and to bury it in trenches dug in straight lines about one foot deep and one foot wide. Also to warn private mehters not to deposit the soil anywhere except in the trenching grounds. (22) To cultivate the trenching grounds as they get manured. (23) To take steps for the introduction of Part IX of the Municipal Act, particularly in the bazar, as without its assistance night-soil will not be thoroughly removed from private privies, and public health will thus continue to be endangered. (24) To take much trouble in laying out the bazar properly, so that it will be convenient and so constructed as to admit conservancy carts to all parts of it, and to provide it with water and with latrines both for males and females. (25) To consider the advisability of establishing

a proper slaughter-house within the limits of the municipality. (26) To put a stop to the practice among the Mahomedans of burying their dead in the compounds of their houses, and to establish a public burial-ground at a sufficient distance from the inhabited quarters of the town. (27) To see that the clothes, pillows, &c., of the Hindu dead are burnt along with the body, and not thrown into the river, as is at present done. (28) To at once put a stop to the practice of throwing into the river the pauper dead of all classes as well as the bodies subjected to *post-mortem* examinations, and to have all such bodies buried or burnt as the case may require. (29) To consider the advisability of introducing the Compulsory Vaccination Act V (B.C.) of 1880 into the town. (30) To keep separate records of births and deaths occurring within the municipality, and to submit the returns in future to this office. Also to take steps to introduce into it the Compulsory Registration Act.

Action taken on the suggestions.—Besides the cleaning of some of the drains during the rains, no substantial work of sanitation has been taken in hand, but it has been resolved to give effect to all the suggestions gradually as funds are available.

Barisal Town.—*Inspected in February* 1885.—The sanitation of this town was not quite satisfactory. There were grave defects in its sanitary condition, which required early attention. Since the town was last visited, much has been done to improve matters in this direction, but much more remains to be done to place the town on a thoroughly sanitary footing. It appeared that the Commissioners were taking interest in its welfare.

The suggestions were—(1) To divert year after year a much larger portion than 4·06 per cent. of its income in rectifying the grave sanitary defects which still existed. (2) To enforce the sections of Part VI of the Municipal Act which relate to building regulations in the bazar and in those quarters of the town where overcrowding of huts exists. (3) Not to allow the irregular laying out and construction of houses without proper provisions for ventilation or passages between them for admitting conservancy carts. (4) To persevere in the removal of the old encroachments on the bazar road. (5) To have all the pits, hollows, and ditches that are all over the town more actively filled up than is being done at present. (6) To extend gradually the lighting of the streets as funds will permit. (7) Not to allow earth to be dug out of the drains in future, and to take entire control of all drainage channels in the town and prevent rubbish being thrown into them. (8) To get all long-existing encroachments over drains removed. (9) To rectify the defects in the levels of the drains generally which prevents the water from running on freely and smoothly. (10) To endeavour to induce the people to keep the house drains free from vegetation and accumulations of decomposing matter. (11) To keep the ditches and khals scrupulously clear of night-soil and every other offensive matter, so that the rule for tanks in the town to be connected with the tidal ditches may be carried out properly. (12) To utilise the earth that would be available when the Bibi's tank will be dug out next year in filling up holes and excavations. (13) To consider the advisability of removing the weeds from some of the foul tanks, of having some re-dug on account of the silt deposited in them by the river, and of filling up others with *char* earth. (14) To re-dig the tank near the Jews' shop in the civil court compound. (15) To take immediate steps to prevent the contents of the new public latrine near the kotwally discharging into a public tank. (16) Not to trench night-soil so near the tank in which the prisoners bathe. (17) Not to throw dead bodies and carcasses of animals into the river even beyond municipal limits, as it is not fair that the people living there should be subjected to the evils arising from the practice. (18) To adequately increase the conservancy establishment of the town and the number of carts so that all conservancy requirements may be effectually attended to. (19) To have the lanes and bye-paths daily swept in addition to the main streets. (20) To construct more public latrines at place where they are most required, and, before providing these, to apply to this office for plans of latrines as the present plan on which they have been constructed is objectionable. (21) To have the latrines for females quite distinct from those for males, in different enclosures with different entrances. (22) To take steps for the early introduction of Part IX of the Municipal Act to enable the Commissioners to exercise better and more strict control over the construction and cleaning of private privies. (23) To extend to the whole town the system of having private privies attended to by municipal mehtors. (24) To have not only the gumlahs but also the drains and the walls of the public privies to the height of about three feet from the ground tarred at least twice a month. (25) To provide the public latrines with cess-pools and to remove the urine and washings to the trenching ground. (26) To treat simi[illegible] fluid refuse from houses. (27) To have the dry-earth system introduced and proper[illegible] out in the public latrines. (28) To make better arrangements for the disposal [illegible] litter from the cattle-sheds. (29) To direct the overseer to attend to the public l[illegible] carefully, and see that all the suggested arrangements regarding them are properl[illegible] out. (30) To require the owners of the private markets to improve generally th[illegible] of those places. (31) To consider the advisability of establishing a municipal [illegible] house. (32) To see that in the Mahomedan burial-ground the dead are burie[illegible] sufficient depth, so that the chupper, which is usually placed over the corpse, may be four feet below the surface of the ground. Also to ask the Jail Superintendent to see that the graves of the convicts are dug sufficiently deep. (33) To have the pillows, clothes, mats, &c., of the dead burnt along with the body, instead of being thrown about. (34) To consider the advisability of introducing the laws prohibiting the practice of inoculation and rendering vaccination compulsory. (35) To fully utilise the provisions of the Compulsory Registration Act, and to adopt measures generally for improving registration. (36) To

enquire into the causes of the unhealthiness of the portions of the town called Hatkhola and Chamarputty, and to apply the remedial measures required.

Action taken on the suggestions.—(1) Part IX of the Municipal Act has been introduced. (2) Shallow pits and hollows are being gradually filled up. (3) Steps have been taken to improve the condition of the house drains. (4) The Collector has been requested to have the Government tank near the Jews' shop cleared of all weeds. (5) Two conservancy carts have been purchased, and a Dome has been appointed. (6) Two public latrines will be constructed, one in the bazar and the other in Biswassur Babu's mohullah. (7) Tar is being used in the public latrines. (8) One public latrine has been, and the other two will also shortly be, supplied with masonry cess-pools. (9) The trenching system is being properly carried out. (10) The condition of the hât has been materially improved, its floor having been made pucca at a cost of nearly Rs. 500. (11) Steps have been taken to have the clothes, pillows, &c., of the dead burnt to ashes.

Midnapore Town.—*Inspected in March* 1885.—The sanitation of this town was not satisfactory. There were grave sanitary defects, particularly under the heads of drainage and conservancy. The water-supply of the town seemed to me very bad. Under the present system of water-supply Midnapore would, I feared, continue to be affected by serious outbreaks of cholera. A scheme for a good supply of wholesome water in the town seemed absolutely necessary. The arrangements under the head of the disposal of the dead were in some instances objectionable.

The suggestions were—(1) To employ the amount become available by the municipality having been relieved of Police charges in improving the sanitary status of the town, and, in addition, to allot a legitimate share of their remaining income for the same purpose. (2) To gradually fill up the pits and excavations that are common throughout the town with street sweepings and earth. (3) To provide more pucca roadside drains. (4) To attend to the subject of the lighting of the streets, and of the planting of trees on the sides of the principal streets. (5) To take professional advice on the subject of a good drainage scheme, and to have the work carried out gradually to completion as funds will permit. (6) To have the bed of the big khal which passes through the centre of the town so dealt with as to prevent pools of stagnant water, which is really sewage, being formed in the dry season. (7) To utilise the sand that would be available in putting the bed of the khal into order, in filling up pits and foul tanks. (8) To attend to the condition of the street side drains, many of which wanted clearing out, and of the larger drains which were found blocked with rubbish in many places. (9) To raise pucca platforms round the public wells set apart for drinking purposes, so that infiltration of spill water may be prevented. (10) To provide all the wells with buckets and chains for raising water. (11) To prevent the pollution of the banks of the river Cossye from which drinking water is taken. (12) To consider the feasibility of undertaking a scheme for a good supply of wholesome water in the town. (13) To properly supervise the conservancy establishment, to define the amount of work which each man has to perform, and to see that that work is taken from him in full. (14) To have the streets and lanes swept daily and surface cleansing generally properly attended to. (15) To require the owners of cattle sheds to pay attention to their cleanliness and not to permit soakage of urine. (16) To provide one more gumlah in each latrine for washings, and to rectify the defect in drainage. (17) To get the gumlahs and drains of the public latrines tarred at least twice a month. (18) To enquire whether any oppression is exercised by the mehters, or whether their conduct is such as to deter the public from frequenting the latrines, and to check irregularities if they exist. (19) To construct the additional public latrines as early as practicable. (20) In constructing new latrines, to make arrangements to have the buildings for females separate from those for males, and to cause the former to be attended to by mehtranis only. Also to have the approaches to the buildings distinct, so that there would be no meeting of men and women during ingress and egress. (21) To exercise greater vigilence with the increase of public latrine accommodation in putting down promiscuous defœcation. (22) To rectify the defects in connection with the trenching system. (23) To appoint an active and trustworthy overseer who should see that the night-soil is removed from the town and properly disposed of. (24) To induce those who have no private latrines, but can afford the cost of construction, to provide themselves with them. Also to take steps to have those privies which are situated near house wells removed to other sites sufficiently distant from them. (25) To acquire, if possible, cultivable land for trenching night-soil, and when the land has been well manured to have it regularly cultivated by the municipality or farmed out. (26) To close the Mahomedan burial-ground at Mirzabazar as it is much crowded in places. (27) To see that in the municipal burial-grounds bodies are buried in regular lines at fixed distances, so that much space would be saved, and the ground be much more easily preserved from growing into jungle and becoming unsightly. (28) To consider the advisability of removing the Tontiguriah burial-ground to a little south of its present position, so that water would pass from it towards the river. (29) To see that bodies are buried sufficiently deep to allow of the usual chupper over the Mahomedan dead being placed about four feet below the surface of the ground. (30) To deal very cautiously with the question of giving permission to the respectable Mahomedan gentlemen to bury their relatives in the compounds of their houses. (31) When cremations are made, to destroy by fire all pillows, mats, &c., of the dead. (32) To give effect to the proposal of acquiring a plot of land in the jail garden, and of establishing a municipal market thereon. (33) To consider the question of establishing a municipal slaughter-house. (34) To see that good lymph is used by the vaccinator specially at the beginning of the hot weather. (35) To utilise fully

the provisions of the Compulsory Registration Act. (36) To continue the system of requiring the mukhyas (headmen) to report every death or birth occurring within their respective mohullahs. (37) To carry out the *hath-chitti* system more systematically, and to exercise proper supervision over it. (38) To rectify the defect in connection with there being no proper provision for ventilation in most of the lodging-houses.

Action taken on the suggestions.—(1) Trees are being planted on the sides of the principal streets and two malis have been appointed to look after them. (2) Steps are being taken to provide the town with an efficient system of drainage. (3) The khal which passes through the town has been bunded up at Chirimarshai, with a view to clearing the silt below the bund, and preventing pools of stagnant water forming in the dry season. (4) Steps are being taken to improve the water-supply of the town. (5) Pucca platforms will be raised round the public wells, and they will also be provided with buckets and chains. (6) The owners of the tanks near the khal are being induced to have them connected with it. (7) Proper supervision over the conservancy establishment is being exercised through the agency of the several ward committees appointed for the purpose, and the cleaning of the roads and drains are being properly attended to. (8) Steps are being taken for acquiring lands for the construction of public latrines. (9) All the existing public latrines have been provided with additional gumlahs for washings, and the gumlahs and the drains of the latrines are now being tarred twice a week. (10) The conservancy supervising staff has been directed to prevent defœcation on the bank of the river Cossye. (11) The Mahomedan burial-ground at Mirzabazar has been closed. (12) A mehter has been specially appointed to keep the Mahatabpur burning-ground clean, and see that the bodies as well as the clothes, &c., of the deceased are completely burned. (13) A plot of land in the jail garden has been leased for establishing a slaughter-house thereon, and the overseer has been directed to prepare an estimate for the new building. (14) Guriahs (small filthy tanks) are being filled up with street sweepings.

Darjiling Town.—*Inspected in May and June* 1885.—The sanitary arrangements of Darjiling were, on the whole, very satisfactory. Much had been, and was being, done for the improvement of this important sanitarium. The Commissioners were fully alive to its sanitary requirements. I found that the drainage and water-supply arrangements were susceptible of considerable improvement.

The suggestions were—(1) To expend annually a larger share of the municipal income in placing the town on a perfectly sound sanitary footing, specially as a large sum has become available for this purpose by the municipality having been relieved of Police charges. (2) To stop making the excavation on the property of Mrs. Rosamond on the Auckland road, which appeared likely to endanger the stability of the hill-side by bringing down land-slips and blocking the road. (3) To provide cemented drains first in the bazar as much as possible, and to consider the advisability of cementing all those drains that carry cook-room water which, during the dry season, passes between the stones of the existing drains and soaks into the earth and gives rise to foul smells. (4) To have the drain coming down from the Chowrasta, which passes to west of Tendook's house, made pucca for some distance further, so as to prevent the detention of rubbish in the various inequalities of the jhora, and to admit of its being kept clean. (5) To increase the conservancy establishment and the number of carts. (6) To compel the cow-keepers in the Bhooteah busti to remove the cow-dung to a greater distance than at present. (7) To improve the condition of the Bhooteah busti particularly with regard to its conservancy and drainage, and to provide another public latrine near a culvert on the road to Lebong under which the Bhooteahs go to ease themselves. (8) To get the floors of the latrines near the bazar and of that in the Bhooteah busti repaired. (9) To increase the number of latrines for females, and to have these structures entirely separate from those for males in different enclosures, with different entrances. (10) To have the receptacles used in the public latrines tarred regularly at least once or twice a month. (11) To further extend the improved shop accommodation for petty traders in the bazar. (12) To provide additional taps inside both the cattle and sheep-killing houses, so that water may always be running during the process of slaughtering for the speedy removal of blood and to prevent its drying up and clotting in the drain outside. (13) To undertake a close examination of the whole area of supply on Senchal to ascertain what additional springs can be tapped in case of failure of present supply or of an increase being required. (14) Not to take any steps to restrict the water-supply by artificial means as in English towns, but to have it increased, so that the wants of the whole community may be fully met. (15) Not to agree, to any arrangement by which the Government, in the Military Department, will be able to have control over the water-supply of the town, but to take every means not only to guard the present springs, but also to acquire control over others. (16) To communicate with the Conservator of Forests on the subject of planting trees on the hillside near the supply tank No. 8 in the Rungbool Forest Reserve and at other places on which the trees have not naturally been reproduced. (17) To take the greatest care to keep the tanks in the forest free from vegetation. (18) To consider the advisability of improving the present bathing-platform in the bazar by providing a trough on the model of the platforms in use in Calcutta. (19) To see that the Roman Catholic Convent burial-ground, which is situated within the station, is not overcrowded. (20) To fully utilise the provisions of the Compulsory Registration Act, and to adopt measures generally for the improvement of registration of births and deaths.

Action taken on the suggestions—(1) Numerous gaps in fencing have been closed up, old fencing has generally been repaired, and the entire fencing improved by more securely fastening the rails to the posts. (2) Two hundred *cryptomeria* trees have already been planted, and an arrangement has been made with the Superintendent of the Royal Botanical

Garden, Calcutta, for attending to this work during the next ten years. (3) The Bengal Government have been moved to sanction certain bye-laws under section 232 of the Municipal Act for the better control of excavations. (4) The jhora down to Lloyd's Botanical Garden has been converted into a stone drain, and action will now be taken to complete house-connections with it. (5) Experiment will be made of replacing stone drains by those made with glazed tiles. (6) The channel between the cart-road and Ojagir Barber's house has been re-made with stones bedded in lime mortar. (7) The wire-tramway has been completed, and is at work for some months. (8) Three new latrines have been provided in the Judge's bazar on municipal requisition. (9) The drain from the Chowrasta past Tendook's house will receive attention before the end of the financial year. (10) The conservancy establishment and the number of carts have been increased. (11) The cow-dung nuisance in the Bhooteah busti has received attention. (12) The number of latrines for females has been increased. (13) A new public latrine has been provided near the culvert on the road to Lebong, and both the drainage and conservancy of the Bhooteah busti thave been, and will further be, improved. (14) The floors of all public latrines have been repaired. (15) The receptacles in the public latrines are being regularly tarred. (16) The shop accommodation in the central bazar has been increased by the erection of two more barracks. (17) Additional taps have been provided in the slaughter-houses below the Victoria Road, and the slaughter-house in the Bhooteah busti is being kept fairly clean. (18) Arrangements have been made to increase the water-supply of the town. (19) The Conservator of Forests has been communicated with regarding the replanting of trees on the hillside near the supply tank No. 8 in the Rungbool Forest Reserve. (20) The bathing-platform in the bazar will receive the attention it requires. (21) Tanks for dhobis will be provided for in next year's budget.

Nasirabad Town.—*Inspected in August* 1885.—This town was found to be in a bad state. It was full of jungle and of depressions filled with water. Almost all the drains were badly levelled and their outlets were blocked. Houses were seen to be generally arranged round a hole, out of which earth had no doubt been originally taken for building purposes, and which was surrounded by privies and was filled with dirty offensive fluid. The arrangements under the heads of drainage, conservancy, and disposal of the dead were very defective, and in some instances objectionable. On the whole, the sanitary requirements of the town needed much looking after.

The suggestions were—(1) To employ annually a fair share of the municipal income, together with the sum of about Rs. 1,200, which has become available by the municipality having been relieved of Police charges, in rectifying the many serious sanitary defects which yet exist within the municipality. (2) To devise some means for increasing its income. (3) To properly look to the sanitation of certain unhealthy localities of the town, such as Shahara, Kanchijooley, and Kashar. (4) To bring into operation sections 254 to 260, which relate to burial and burning grounds, and Part IX of the Municipal Act. (5) To carry out perseveringly the removal of encroachments upon roads. (6) To fully utilize the street sweepings and the solid refuse from houses for filling up the pits and holes that are common throughout the town, and to take up only so many of the pits, &c., at a time as can be filled up with all possible despatch. (7) To move the Railway authorities to fill up the large excavations by the side of the Railway line. (8) To take steps to improve the condition and levels of the kutcha side drains. (9) To have the question relating to the outlet of drainage settled as soon as possible. (10) To request the Railway authorities to provide sufficient waterway in the place of one of the chief drains closed up by them, as the one already constructed is not sufficient for the purpose. (11) To take early steps to have the encroachments over drains, which are very common in Chota Bazar, where the durzis reside, removed with the exception of the portion necessary for the entrance into shops. (12) To have the scheme for an improved system of drainage carried out gradually, some progress being made every year. (13) To try to improve the condition of the house drains. (14) To select some good tanks in convenient situations, and have them cleared out, protected from pollution, and solely reserved for drinking purposes. (15) To require the owners of private tanks to keep them in proper order. (16) To strictly prohibit the fouling of the banks of the river and of the tanks from which drinking water is taken. (17) To sufficiently strengthen the conservancy establishment and have it well supervised, and to increase the number of carts. (18) To have all the streets and lanes daily swept and the sweepings regularly and properly removed, hand-barrows being employed in the narrow lanes and bye-paths. (19) To require the people to put on the roads at fixed hours all house rubbish, kitchen refuse, &c., for removal by the conservancy carts. (20) To construct more public latrines at convenient places, and to set apart some of them for the exclusive use of females. (21) To provide each cell of the latrines with two gumlahs, one for fœces and the other for washings. (22) To have the gumlahs and the drains and the walls of the public latrines up to three feet high tarred every fortnight. (23) To introduce, if possible, the dry-earth system into the public latrines. (24) To attend early to the defects in connection with the latrine near the dispensary, and to consider the advisability of removing it to some other site. (25) To carry out the trenching system properly, the trenches being dug in straight lines and one foot deep and one foot wide. (26) To open more trenching grounds, as the present one is not conveniently situated with reference to the blocks of privies from which soil is conveyed to it. (27) To request the owner of the Rajah's market to remedy the defects in the place, and to see that the fish market is provided with a good supply of water. (28) To take steps to regulate the traffic in rotten and dry fish, so that it may not prove injurious to

health. (29) To prohibit at once the practice of burying the dead in private compound. (30) To attend to the crowded state of the cemetery for the Christians. (31) To see that is the Mahomedan burial-ground bodies are buried in straight lines and at regular intervals ro prevent waste of space. (32) To stop at once the practice of throwing corpses into the tiver, and to have the clothes, &c., of the deceased burnt along with body. (33) To introduce the Compulsory Vaccination Act V (B.C.) of 1880 into the town, and to appoint a vaccinator to carry on operations within the municipality. (34) To utilize more fully the provisions of the Compulsory Registration Act IV (B.C.) of 1873, and to adopt measures generally for the improvement of registration.

Action taken on the suggestions.—Steps have been taken to fill up pits and excavations. Two public latrines have been put up on the churs in front of the civil station. Steps are also being taken to carry out some of the other suggestions.

Dacca Town.—*Inspected in August* 1885.—The sanitary condition of this town was found to be much better than at the time of the last visit. The Commissioners seemed fully alive to its sanitary requirements, and, in some instances, distinct improvements had been effected. I was very glad to find that three native gentlemen had exhibited highly commendable interest in the welfare of the town by carrying out at their own cost, important sanitary works, foremost amongst which was the extension of the Buckland bund by Babu Rup Lall Dass at an expenditure of over nine thousand rupees. Much, however, had to be done before the sanitation of the town could be pronounced satisfactory. There were still many grave sanitary defects, specially under the heads of drainage, conservancy and disposal of the dead, which required early rectification.

The suggestions were—(1) To make a larger allotment than 3 per cent. of the income for placing the town on a sound sanitary footing. Also to employ, for that purpose, the sum of over Rs. 17,000 which has become available by the municipality having been relieved of Police charges. (2) To utilise more fully the provisions of Part VI of the Municipal Act, which relate to building regulations, to prevent the irregular laying out and construction of houses without any regard to ventilation or crowding. (3) To have the bath-rooms properly connected with the side drains, so that the water from them may not run on to the streets. Also to see that liquid refuse from privies are not permitted to flow over the streets or lanes. (4) To have the waterspouts from the roofs of roadside houses so directed as to discharge into the side drains. (5) To get all encroachments upon roads, in the shape of steps or shop-platforms, removed. (6) To have the kutcha side-drains gradually made pucca. (7) To make persevering endeavours to have all encroachments over and obstructions to drains, removed. (8) To take steps for the removal of jungle by exercising the powers on the subject conferred on them by the Act. (9) To undertake a better and a more improved system of drainage, and to consider the advisability of raising a loan to bring into speedy completion of this highly desirable work. (10) To close all public wells as the filtered water-supply is extended. Also to fill them up after a time when people become indifferent after getting into the way of using the pipe-water. (11) To adequately strengthen the conservancy establishment, and to increase the number of carts and bullocks. (12) After the above has been done, to pay full attention to the conservancy of the town, and to completely supervise the work of this department. (13) To require the owners of cattle-sheds to keep them clean and inoffensive. (14) To require all the residents to bring out within fixed hours all house and kitchen refuse and to deposit on the roadside for removal by the conservancy carts. Also to require them to remove the existing accumulations of rubbish and other filthy matters from within their premises. (15) To construct more public latrines at convenient places, the sites of filled up gors answering well for placing them, and to adopt Hornbury's pattern for the purpose. (16) To take steps for keeping the existing latrines scrupulously clean. (17) To provide, as early as possible, separate public latrines for females, and to cause them to be attended by mehtranis only. (18) With the increase in the public latrine accommodation, to make every endeavour to put down promiscuous defœcation. (19) To make the overseer attend to the public latrines more carefully, and see that all the suggested arrangements regarding them are properly carried. (20) To put up some more public urinals at convenient sites. (21) To get all the private privies without exception cleaned daily, and to induce the owners of such of them as are unprovided with gumlahs and exposed to public view to remedy the defects. (22) To cause the use of well-privies to be entirely suppressed, and to compel their owners to provide for themselves properly-built surface privies with receptacles which can be easily removed and cleaned. (23) To carry out the trenching system properly, and to take steps to get the lands thus manured cultivated. (24) To fully exercise the provisions of Part IX of the Municipal Act in controlling the public and private privies. (25) To take immediate action for acquiring the land required to make a road by which the mehters would obtain access to, and remove night-soil from, gor situated between Lal Chand Mokim's lane and cemetery road. (26) To require the owners of private markets to rectify the defects in those places, and to see that their conservancy is carefully attended to. (27) To consider the advisability of providing a properly built municipal market. (28) To build a proper slaughter-house without delay, to appoint an Inspector, and to allow none but healthy cattle in good condition to be killed. (29) To take up the matter of proper provision of Mahomedan graveyards. (30) To close up at once, with very few exceptions, all private burial grounds, and to prevent all future interments in them. (31) To see that the vault or chupper which is generally placed over the Mahomedan dead is at least four feet from the ground surface 32) To take steps for bringing into operation the Compulsory Vaccination Act V (B. C.)

of 1880 in the town. (33) To fully and carefully utilise the provisions of the Compulsory Registration Act, and to adopt measures generally for improving registration.

Action taken on the suggestions—(1) A great number of sundasses and well-privies have been closed. (2) The filling up of gors has been carried on vigorously. (3) The cartway to the Lukhi Bazar gor has been opened, and the gor is now being rapidly filled up.

Naraingaanj Town.—*Inspected in August* 1885.—Many improvements were found to have been effected since the last inspection of the town, the chief being the provision of more public latrines and the introduction of iron structures for the purpose; the strengthening of the conservancy establishment; the provision of wheel-barrows for the conservancy of the lanes and narrow streets; the acquirement of lands for establishing public burial-grounds; and the appointment of a Registrar to look after the registration of births and deaths. There is yet much to be done to place the town on a proper sanitary footing. The great evil in the sanitary state of Naraingaanj continued to be the innumerable pits and holes of greater or less dimensions; but they were being gradually filled up. The arrangements, too, under the head of the disposal of the dead, as far as interment is concerned, were very objectionable; but steps were being taken to improve matters in this direction. The Commissioners were taking commendable interest in the sanitary welfare of the town.

The suggestions were—(1) To construct a road through the suburb of Madungunge which is an important part of the town. (2) To pay constant attention to the filling up of the worst of the pits and holes, and to press the landowners to do it as speedily as possible with earth in the dry weather. (3) To connect as many of these pits and holes with the river or with the khals as could conveniently be effected. (4) To try to improve the unsatisfactory condition of the existing house drains. (5) To induce the owners of such tanks as cannot be maintained in a wholesome state to have them filled up. (6) To protect scrupulously the banks of the river and of the tanks from which drinking water is taken from being resorted to for defæcation. (7) To further strengthen the conservancy establishment, and to appoint an overseer to carefully superintend the work of this department. (8) To have the bye-paths swept daily and not at intervals as is done at present. (9) To prohibit the throwing of sewage and other offensive matter into deep hollows and ditches, and to require the people to put on the streets or other appointed places all house and kitchen refuse for removal by the conservancy carts. (10) To have the dung from the municipal cow-shed removed outside the municipality and not thrown over the slopes close to the shed to dry up. (11) To provide more public iron latrines at convenient places, and to set apart some of them for the exclusive use of females. (12) To supply one more gumlah to each cell of the kutcha latrines. (13) To try the dry-earth system in all the public privies. (14) To induce those of the people who can afford the cost of construction to provide themselves with properly constructed privies. Also to induce them as well as those who now have latrines to purchase iron latrines of Hornbury's pattern and of sizes suited to their requirements. (15) To make strenuous efforts to put down promiscuous defæcation, specially the fouling of the banks of the Sital Lackhya, when a sufficient number of public privies are provided. (16) To consider the advisability of providing a proper barge for the discharge of night-soil into the midstream of the river during the rainy season, when there is no tidal reflux and thereby getting over the difficulty of trenching in the wet season when it is attended with much trouble. Also to have the night-soil properly trenched during the dry season. (17) To open at once as a public burial-ground the land which was being put into order when I saw it, as part of it was fit for use, and to permit no interments after this in enclosures of houses or in private lands. (18) To take steps from the very beginning to cause the graves in the new burial-grounds to be dug in straight lines. Also to have the bodies buried at a sufficient depth to admit of the chupper, which is usually placed over the Mahomedan dead, being placed at least four feet below the surface of the ground. (19) To provide a burial-ground for the Christians. (20) To consider the advisability of having the Hindu pauper and lunatic dead either burned or buried instead of throwing them into the river Megna, four miles off from town. (21) To give effect to the suggestions made in the last Inspection Report for improving the general condition of the private markets. (22) To establish a municipal slaughter-house. (23) To attend carefully to the conservency of the coolie lines and to see that there is an ample supply of good water. (24) To introduce the Compulsory Vaccination Act V (B.C.) of 1880 into the town. (25) To see that the Registrar specially appointed to look after registration performs his duty properly and carefully.

Action taken on the suggestions—(1) The filthy cess-pool behind the old Railway office has been filled up, and steps have also been taken to fill up the other pits and hollows. (2) The bye-paths are being swept daily. (3) A Mahomedan burial-ground has been provided. (4) The *hath-chitti* system has been introduced in registering births and deaths.

Faridpur Town.—*Inspected in August* 1885.—The sanitary condition of this town found to be as bad as when last inspected about five years ago. No material improvements had been effected under any of the principal heads of sanitation during this long interval. There were many grave sanitary defects, particularly under the heads of drainage, water-supply, and conservancy, which called for early attention. The Commissioners did not seem to have taken that interest in the sanitary welfare of the town which they should have done.

The suggestions were—(1) To allot annually a fair share of the income in additon to the sum of about Rs. 1,600 which has become available to the municipality by its having been relieved of Police charges for placing the town on a sound sanitary footing. (2) To consider the advisability of keeping a smaller balance in hand and utilising the remainder for sanitary requirements. (3) To pay careful and constant attention to the administration of the sanitary clauses of the municipal laws. (4) To level down a foot many of the smaller kutcha roads and utilise the earth for improving the level of the side ditches. (5) To take care that the narrow lanes are not converted into receptacles for filth and other offensive matter of the neighbourhood. (6) To provide additional waterways by bridges and culverts in some of the roads and specially the Jessore road. (7) To make persevering efforts to fill up the innumerable pits and hollows all over the town, and to limit the operation to only so many of them at a time as can be filled up within a short period. Also to connect as many of those pits and excavations with the khals as could conveniently be effected, and to have them regularly flushed during the floods to prevent stagnation of water in them. (8) To put up lights in some of the streets which are overshadowed by trees, and are consequently almost impassable on dark nights. (9) To provide, besides the pucca bridge of three arches, sufficient waterway to let the water of the chief khal flow freely away. (10) To pay greater attention to the drainage of the town, and have levels taken and good outlets of discharge obtained. (11) To prohibit the practice of taking earth from the drains and thereby destroying their level. (12) To have the Julee (khal), which runs from north to south, re-excavated and deepened to get a supply of the river-water all the year round. (13) To require the owners of such privies as are within 50 feet of some of the public tanks to have them removed to a safe distance. (14) To cut down some of the trees near the banks of the Kutcherry tank, and to have the overhanging branches of others removed. (15) To acquire in every village under the municipality at least one of the private tanks, and to get it re-excavated, thoroughly protected and set apart for drinking purposes. (16) To protect carefully the banks of the khal and of the tanks from which drinking water is taken from being resorted to for defœcation. (17) To sufficiently strengthen the conservancy establishment, and to maintain a close supervision over the work of this department. (18) To have all the streets swept daily and the lanes and bye-paths as frequently as possible. (19) To require the people to put on the roadsides at stated hours all house refuse, and to have it regularly and properly removed by the conservancy carts. (20) To fully utilise street sweepings and the solid refuse from houses in filling up pits and excavations and foul tanks. (21) To construct more public latrines at convenient places, and to set apart some of them for the exclusive use of females. Also to provide one good latrine (Hornbury's pattern, made of corrugated iron) for the accommodation of the bazar people. (22) To gradually put down promiscuous defœcation inside municipal limits as more public latrines are provided. (23) To get all the filth of the inhabitants daily removed from their privies and buried in shallow trenches in the cold season and disposed of in the river when full of water. Also to apply Part IX of the Municipal Act to the whole town except the outlying villages where there are convenient fields for resort. (24) To require the owner of the private market to rectify the defects in it. (25) To have the graves in the Mahomedan burial-ground dug sufficiently deep to allow of the chupper which is usually placed over the Mahomedan dead being four feet below the surface of the ground. (26) To get the Mahomedan and Christian pauper, &c., dead buried instead of throwing them into the river as is at present done. (27) To put a stop to the objectionable practice of throwing uncremated bodies into the river. (28) To look after the conservancy of the lodging-houses, and to require their owners to keep the surroundings of those places free from jungle and accumulation of rubbish or filth. (29) To bring into operation the Compulsory Vaccination Act V (B.C.) of 1880 in the town, and to employ the municipal vaccinator not temporarily during the cold season only, but for the whole of the year. (30) To introduce into the municipality the Compulsory Registration Act IV (B.C.) of 1873, and to utilise its provisions properly.

Action taken on the suggestions.—(1) Lights have been provided on three of the important streets. (2) The making of improper excavations within municipal limits has been prohibited under section 232 of the Municipal Act, and the existing pits and hollows are being filled up with street sweepings, &c.

Goalundo Town.—*Inspected in August* 1885.—This town has been constituted a municipality very recently, the Bengal Municipal Act III of 1884 having been introduced into it in January last. It has been rapidly rising into importance as a seat of commerce since the extension to it of the railway and that of the river steamer service. But it is very unfavourably situated with reference to the river Pudma, the encroachments of which necessitate the periodical changing of the site on which the town is built. For that very reason no sanitary work of a permanent nature can, with advantage, be undertaken. The existing sanitary arrangements, however, considering the circumstances of the place, seemed to be unobjectionable. At the time of my visit the whole town and the neighbourhood with the exception of the bazar and a triangle contained between two raised roads and a railway embankment was under water. The municipality was too poor to cope with the natural difficulties which it was subject to

The suggestions were—(1) To get all stagnant pools left by the fall of the river drained off as rapidly as possible by making suitable cuts. (2) To utilise street sweepings and house refuse in filling up such hollows and excavations as might be made for taking earth for building purposes. (3) To introduce corrugated iron latrines in case the Commissioners desire better latrines than their present mat ones. (4) To take steps to inform the Railway

authorities and the steamer companies of the dates of the festivals at Nobodip, when there is a considerable rush of pilgrims through Goalundo to attend them, so that arrangements may be made beforehand for their quick removal. (5) To attend to the latrine accommodation of the pilgrims, trench latrines surrounded with mat walls being put up at convenient places, and to warn them against fouling the banks of the cuttings and of the tanks from which drinking water is taken. Also to adopt measures to isolate cases of contagious or infectious diseases breaking out among the pilgrims. (6) To give special attention to vaccination, and to employ a vaccinator at least during the vaccinating season from October to March, as small-pox is very likely to be introduced through the medium of the pilgrims who halt in this town. (7) To keep a separate record of the births and deaths occurring within the municipality. Also, after the Commissioners have undertaken the registration work in their hands, to bring into operation the Compulsory Registration Act IV (B.C.) of 1873 in the town, and to utilise its provisions properly.

Action taken on the suggestions.—(1) Parts VI, IX, and X of the Municipal Act have recently been introduced into the town. (2) Some more tanks are being excavated. (3) Corrugated iron latrines will be provided gradually as far as the funds will permit. (4) Arrangements have been made to expedite the transport of pilgrims in future. (5) A vaccinator has been appointed since January last to carry on operations.

Julpaiguri Town—*Inspected in August* 1885.—This place has been constituted a municipality only recently. During the interval between its ceasing to be an union and its creation as a municipality, it has suffered somewhat in a sanitary point of view. At the time of my visit, I saw many grave sanitary defects in it, particularly under the head of drainage, which called for urgent rectification. The whole town, except around the houses of the European officials, was overgrown with jungle, which was both high and dense. In fact, I found the place little better in condition than a country village.

The suggestions were—(1) To consider the advisability of devising means to improve its financial affairs, and to devote a legitimate share of its income to sanitary improvement. (2) To take steps for bringing into operation Parts VI and IX of the Municipal Act III (B.C.) of 1884 as they provide most important sanitary regulations, without the application of which it is almost impossible to maintain effective sanitation. Also to bring into force a code of bye-laws framed under the abovenamed Act, in order that the administration of it sanitary clauses may be made more easy. (3) To provide proper roads in those quarters of the town where there want is severely felt by the people, and in constructing new roads to pay special regard to the opening up of some of the crowded and unhealthy localities. (4) To put a stop to the practice of digging pits for taking earth for building purposes, and to make persevering endeavours to fill up the existing depressions with street sweepings and with sand from the riverbed in the dry season. (5) To overcome by the application of the municipal law the opposition of the people to measures calculated to secure cleanliness and general conservancy. (6) To induce the owners of private properties to clear off jungle from their lands. (7) To consider the advisability of providing gradually an improved system of drainage, the most badly-drained portions of the town being taken up first. (8) To have the pits and excavations now full to overflowing with water connected as far as practicable with one another and with the drainage system, not only to carry off as much water as possible, but by keeping it in motion to prevent stagnation. (9) To strictly prohibit the taking of earth from the roadside drains and thereby destroying their levels. (10) To supply a metal bucket, chain, and pulley for drawing water from the public well in the bazar. (11) To require the police to put down defæcation on the banks of the river by reporting the offenders for punishment. (12) To increase the conservancy establishment and the number of carts, and to see that the work of this department is properly supervised by the Nuisance Inspector. (13) To get all the streets swept daily and the lanes and bye-paths at least twice a week, and the sweepings utilised in filling up pits and excavations. (14) To require the owners of cattle-sheds to keep them in a clean and inoffensive condition. (15) To construct some more public latrines at convenient places, and to set apart some of them for the exclusive use of females. (16) To have the receptacles used in the public privies tarred at least twice a month. (17) With the increase of the public latrine accommodation to make every endeavour to put down promiscuous defæcation. (18) To require the private mehters to remove all night-soil to the trenching ground for burial (19) To see that night-soil instead of being pitted is buried in shallow trenches one foot wide and one foot deep, and dug in straight lines, and that only about six inches of night-soil is put into them, the trenches being then covered with earth. (20) To acquire cultivable land at the outskirt of the town for establishing one or more trenching grounds. (21) To require the owners of the private bazar to correct the defects in it. (22 To see that the graves in the Mahomedan burial-grounds are dug in rows with fixed intervals between each grave and each row. (23) To require the fakir, who is in charge of the public Mahomedan burial-ground, to keep registers of all those brought there for interment. (24) To introduce the Compulsory Vaccination Act V (B. C.) of 1880 into the town, and to employ a special vaccinator for carrying on operations within the municipality at least during the vaccinating season. (25) To take over the registration work from the hands of the police, and to fully utilise the penal provisions of the Compulsory Registration Act IV (B.C.) of 1873.

Action taken on the suggestions.—Steps have been taken to introduce Part IX and certain sections of Part VI of the Municipal Act.

Dinajpur Town.—*Inspected in October* 1885.—This municipality was found in a better state than when last inspected. Many improvements had been effected in its sanitary status, but much more still remained to be done in this direction. The conservancy, and the drainage arrangements in particular, were very defective, and required urgent rectification. It was, however, contemplated to shortly provide the town with an effective system of drainage, the entire cost of which, about Rs. 28,000, having been promised by the Maharaja of Dinajpur.

The suggestions were—(1) To largely utilise for sanitary improvements the amount become available by the municipality having been relieved of the cost of maintaining the police. (2) To fill up all pits and hollows with street sweepings and house refuse where earth is not procurable, and to strictly prohibit, under the provisions of the Municipal Act, the making of all future excavations. (3) To take opportunity on the occasions of fires, which are said to be common in Dinajpur, to have the houses built on an approved plan, proper provision being made for ventilation and passages between them for admitting conservancy carts. (4) To have the heavy overgrowth of jungle in parts of the town cut down, or better, up-rooted as fast as possible, and to induce the owners of private properties to act similarly with regard to jungle on their lands. (5) Not to lose any further time in undertaking and bringing to completion the long-contemplated drainage scheme. (6) To have some more tanks situated in convenient localities acquired, re-excavated, and reserved for drinking purposes. (7) To induce the owners of those tanks which are deep enough to retain water all the year round to dewater them and remove the foul debris at their bottoms. Also to prohibit the casting of house refuse and rubbish on the banks of the private tanks. (8) To consider the advisability of providing the wells reserved for drinking purposes with pumps and metal buckets and chains for raising water. (9) To endeavour to prevent the fouling of the banks of the Gagra nullah and of the Puranabhaba river. (10) To sufficiently strengthen the conservancy establishment and to increase the number of carts, so that the conservancy requirements of the whole town may be thoroughly attended to. (11) To have all the lanes and bye-paths swept at least twice a week, and to pay particular attention to their conservancy. (12) To provide barrel carts for the removal of liquid house and kitchen refuse to the trenching ground for disposal. (13) To construct some more public latrines at convenient places, and to set apart some of them for the exclusive use of females; and to consider the advantages of adopting the corrugated iron latrines, Hornbury's patent, sold by Messrs. Burn and Company, of Calcutta, which are very well suited for crowded neighbourhoods, where a small latrine is required and which can be easily kept clean and removed from one site to another. (14) To provide one more gumlah in each cell of the public latrines for urine and washings. (15) To have the gumlahs, the drains and the walls of the public latrines up to three feet high tarred at least twice a month. (16) To efficiently carry out the dry-earth system in all the public latrines. (17) To put up some public urinals in some of the crowded thoroughfares. (18) With the increase in the public latrine accommodation, to make every endeavour to put down promiscuous defæcation. (19) To introduce Part IX of the Municipal Act on an early date, as then the municipality would have complete control over the construction and cleansing of all the latrines. (20) To carry out the trenching system in the manner followed in the jail gardens. (21) To request the owners of private markets to have the floors gradually paved and to keep them in proper order. (22) To consider the desirability of establishing a municipal slaughter-house. (23) To prevent the burial of bodies at random and to see that in all the burial-grounds graves are dug in lines with sufficient spaces between one another. (24) To have the clothes and pillows of the dead burnt along with the body, instead of being allowed to be taken away by the Domes who may offer them for sale in the bazar, and thus unwittingly help the spread of contagious diseases. (25) To introduce the Compulsory Vaccination Act V (B.C.) of 1880 into the town, and to carry on vaccination throughout the year instead of during six months. (26) To bestow special attention to the registration of births and deaths, to specially appoint a person to detect evasions on the part of the people, and to invariably punish the constables under section 6 of the Compulsory Registration Act if they omit to report births and deaths occurring in their beats. Also to consider the advisability of making the tax-collectors enquire into the occurrence of these events and to report them to the municipality, this duty hardly proving a tax on them, as they can easily perform it during the course of their rounds in executing their regular duties.

Action taken on the suggestions.—Several of the suggestions have been adopted, and effect will be given to several others by and by.

Rungpore Town.—*Inspected in November* 1885.—From the backward state into which this town had fallen since my last visit, it was evident that its sanitary condition had not received proper attention at the hands of the Commissioners, and that the conservancy overseer and his establishment had entirely neglected their duty. The drainage was extremely defective, and the water used by the people for drinking and domestic purposes equally bad. The conservancy arrangements were totally incommensurate with the needs of the town, and some of those obtaining under the head of the disposal of the dead were really very objectionable. Decaying vegetation was very abundant, and, to add to the miseries of the place, the food-supply was deficient both in quantity and quality. All these circumstances combined have tended to seriously deteriorate the health status of Rungpore, and to make it one of the most unhealthy towns in Bengal, so much so that over 60 per cent. of the population are said to suffer from malarious fever, which prevails during the greater part of the year.

The suggestions were—(1) To actively look after the sanitary condition of the town, and to consider the advisability of imposing additional taxation for providing funds to carry on sanitary works. (2) To expend on sanitary improvements a part of Rs. 2,300 annually set free by the municipality having been relieved of police charges and a part of the money hitherto spent for the construction, maintenance and repair of roads which, under present arrangement, are kept up by the Road Cess Department. (3) To properly utilise the sections of Part VI, which relate to building regulations and to prevent the irregular laying out and construction of houses without any provision for ventilation or passages between them for admitting conservancy carts. (4) To provide all the roads with sufficient water-way. (5) To perseveringly carry out the work of filling up all deep holes, hollows, and excavations, and to take up only so many of them at a time as can be dealt with with all possible expedition, till they can be filled up, to have the large hollows connected as far as practicable with one another and with the main drainage channels to prevent stagnation of water in them. (6) To prevent, by the strict application of the law on the subject, the making of excavations in future for the purpose of taking earth, &c., therefrom. (7) To see that after trees are planted on the sides of the principal streets they are taken care of and protected from nibbling by cattle. (8) To insist in future on the building of new houses on a better and approved plan. (9) To introduce Dr. Cunningham's Sanitary Primer in all schools maintained and aided by the municipality, so that the rising generation may learn to appreciate the sanitary precautions conducive to the maintenance of health. (10) Not to allow the drainage channel between the Chikli and the Kakrul bhils to get more blocked up with vegetation than at present, and to have parts of it regularly cleaned annually. Also to strictly devote to the maintenance of the channel in good order the revenue derived from farming its fishery. (11) To allow no fishing weirs to be erected in drainage channels, although they may bring in a little additional revenue. (12) To undertake a detailed survey of the town for finding out how the civil stations, Nowabgunge, Dhap, and Mygunge, &c., may be efficiently surface-drained. (13) To grant the small expense which may be required for the proper preparation of the scheme for introducing the Teesta water into the Ghagut river. (14) To bestow earnest attention to the whole question of drainage as so far as it has gone it has proved greatly beneficial to the health of the station. (15) To induce the well-to-do owners to have some of their tanks re-excavated, protected from pollution, and reserved for drinking. (16) To provide all the wells used for drinking purposes with pumps or pulleys and metal buckets for drawing water. (17) To consider the advisability of acquiring at least one tank in every mohullah and of re-excavating, thoroughly protecting, and reserving it for drinking purposes. (18) To adequately increase the conservancy establishment and the number of carts, so that all requirements may be properly and effectually attended to. (19) To provide wheel-barrows for the conservancy of the narrow lanes and bye-paths. (20) To require the people to put on the roads at fixed hours all house and kitchen refuse for removal by the conservancy carts. (21) To have all the main streets swept at least every alternate day, and the lanes and bye-paths twice every week, and to properly utilise the sweepings in filling up pits and holes. (22) To require the owners of cow and cattle sheds to maintain them in a clean and inoffensive state. (23) Not to permit cowdung to be accumulated within the premises, but to have it either converted into cakes for fuel or deposited on the fields as manure. (24) To provide an adequate number of public latrines at convenient places and to reserve a few of them for the separate and exclusive use of females. (25) With the increase in public latrine accommodation, to take steps to put down promiscuous defæcation. (26) To have the gumlahs, the drains and the walls of the public latrines up to three feet high tarred at least twice a months. (27) To keep the public latrines in good repair and to cause the conservancy overseer to see that these places are kept scrupulously clean and swept. (28) To induce those of the people who can afford the cost of construction to provide themselves with properly constructed surface privies with vessels for the reception and easy removal of the night-soil. (29) To introduce Part IX of the Municipal Act on an early date, for the present objectionable arrangements connected with the private privies render it absolutely necessary for the municipality to control and supervise their construction and cleaning. (30) To carry out the trenching system properly as in the jail gardens, and to use gardens and other raised grounds, if possible, for trenching night-soil during the rains, and to induce private gentlemen to make over their gardens for this purpose. (31) To require the owners to provide their markets with proper drains and floors, and to otherwise improve their condition. (32) To consider the advisability of establishing a municipal slaughter-house. (33) To take steps generally for improving the food-supply of the place. (34) To prevent the practice of burying at random and to have the bodies buried in lines with fixed intervals between each grave and each row of graves. Also to see that the vault or chupper, which is usually placed over Mahomedan corpses, is at least four feet from the surface of the ground. (35) To take immediate steps for putting down *intramural* burial. (36) To provide another burning-ground at some convenient place. (37) To have the clothes, pillows, &c., of the deceased burnt along with the body. (38) To overcome the opposition of the people to vaccination by the fuller exercise of the penal provisions of the compulsory law on the subject. (39) To fully utilize the provisions of the Compulsory Registration Act, to appoint a person to detect and report evasions by the people, and to have the evaders and the constables who omit to report deaths occurring in their beats systematically punished under the penal clauses of the law.

Action taken on the suggestions.—No action commensurate with the evils to be remedied has followed the suggestions made. But it is proposed (1) to extend Part IX of the Municipal Act to one part of the town (Nawabgunge) at present. (2) To call upon all householders to remove the bunds across the drains which they now use as pathways to their

houses, as soon as the municipality is in a position to supply suitable Raniganuge drain pipes for the purpose. (3) To issue a general order under section 232 of the Municipal Act, prohibiting the making of excavations without the permission of the proper authorities. (4) To prohibit the erection of fishing weirs on the drains in future. (5) To re-excavate the municipal tank to the east of the municipal garden, and to utilise the earth in filling in the Chandwari tank. (6) To require the owners of the Dhap, Nawabgunge, and Mahigunge bazars to provide drainage, latrine, and water-supply for their markets

Bogra Town.—*Inspected in November* 1885.—Since last inspection in July 1880, many improvements were found to have been effected in the sanitary status of this municipality, the chief being the provision of a public burial-ground for the Mahomedans, the suppression of interments in the compounds of houses, the construction of a public latrine and a urinal, the metalling of the roads, the cleaning of ten wells, the construction of eight kutcha roads and of six pucca culverts, the purchase of two fire-engines, and the provision of two carts for watering the streets. There were, however, still many grave sanitary defects, particularly under the heads of drainage and conservancy. The water-supply question too required very careful consideration.

The suggestions were—(1). To continue to devote a legitimate share of the municipal income to sanitary improvements. (2) To utilise more fully the sections of Part VI of the Municipal Act, which relate to building regulations, in order to prevent the future crowding togethers of huts without proper provision for ventilation or passages between them for admitting conservancy carts, the evil consequences of which may in course of time become very serious. (3) To have all the roads gradually metalled. (4) To consider the advisability of having the denser groves of bamboos thinned out, as health is likely to be greatly benefited thereby. (5) To undertake a proper drainage scheme, and to carry it out gradually, but as rapidly as the funds will allow, and to have the outlets made pucca bye and by. (6) To provide at least one tank in each mohullah in the municipality, and to have it thoroughly protected from pollution and exclusively set apart for drinking. (7) To have the jungle growing on the banks of some of the private tanks removed. (8) To provide the public wells with metal chains and buckets for raising water. (9) To sink some pucca wells at convenient places particularly in the vicinity of crowded localities, and to reserve them for drinking only. Also to induce those of the inhabitants who can afford the cost of construction to provide themselves with properly built masonry wells. (10) To request the Superintendent of the Jail to have the latrine on the bank of the river Karatoya, and belonging to the Jail Department, removed to a safe distance as soon as possible. (11) To adequately increase the conservancy establishment and the number of carts, so that all the conservancy requirements of the town may be properly attended to. (12) To take steps to have all the streets swept daily, and the lanes and bye-paths at least twice a week. (13) To require the owners of cow and cattle sheds to keep them in proper order, and not to allow the ordure to be accumulated within the premises; but to have it either converted into cakes for fuel or removed outside the municipality. (14) To construct more public latrines at convenient places and to have some of them set apart for the exclusive use of females. Also to consider the advisability of adopting the iron latrines, called Hornbury's patent, sold by Messrs Burn & Co., of Calcutta, which are easily managed and consequently less offensive and can be shifted from site to site. (15) To supply two gumlahs to each cell of the new public latrine. (16) To have the gumlahs, the drains, and the walls of the public latrines up to three feet from the floor tarred at least twice a month. (17) To take early steps to suppress the abominable well-privies and to require their owners to provide in their stead properly constructed surface privies with receptacles for the excreta. (18) To take immediate steps for the introduction into the town of Part IX of the Municipal Act, as then the Commissioners would have complete control over the arrangements connected with public and private latrines. (19) To require the private mehters to carry all night-soil to the trenching ground for burial and to prosecute them if they dispose of it otherwise. (20) To carry out the trenching system properly, the trenches being dug in lines one foot wide and one foot deep and only six inches of night-soil put into them, the remainder being filled with earth. (21) To request the owners to provide their markets with drains and proper pathways between the stalls, and to generally keep their markets in a satisfactory condition. Also to require the owner of the Kalitollah market to fill up the hollow to the south end of his market. (22) To consider the advisability of establishing a public slaughter-house on a small scale. (23) To take particular care with regard to the laying out of the graves in the new Mahomedan burial ground, the graves being dug in lines with fixed spaces, between each grave and each row of graves. Also to see that the bodies are buried at a sufficient depth to allow of the chupper, which is usually placed over the Mahomedan corpse being at four feet, instead of two as at present, from the surface of the ground. (24) To make arrangements for keeping the burning-grounds in a satisfactory condition and for preventing such unsightly objects as half-burned pieces of wood, bones, clothes, mats, &c., lying about, and to have the clothes, pillows, and mats of the dead burnt along with the body. (25) To abandon the river-bank and take up another site where the Hindu pauper, &c., dead, and the bodies of certain class of Hindus as well as medico-legal corpses may be buried as the present arrangement might lead to the pollution of the river water. (26) To fully utilise the provisions of the Compulsory Vaccination Act, and to retain the services of the vaccinator for the whole of the year instead of for a few months only, so that the protection of the town from small-pox may be enhanced. (27) To bestow continued attention to the registration of births and deaths.

Rampore Beauleah Town.—*Inspected in November* 1885.—The sanitary arrangements of this municipality were in several respects satisfactory. Commendable sanitary improvements were observed to have been effected in this town since it was last visited. Four public latrines had been constructed; the throwing of corpses into the river had been prohibited, the Compulsory Vaccination Act V (B.C.) of 1880 had been brought into operation, Part IX of the new Municipal Act had been extended to 13 mohullahs of the municipality, two public Mahomedan burial-grounds and a burning ghât had been provided, four main drains had been constructed for the more efficient drainage of the town at a cost of about Rs. 9,000, three metalled roads with a sufficient waterway and thirteen kutcha roads had been constructed, the collection of the vital statistics had been placed under municipal management, a stove had been constructed for fumigating the clothes, &c., of those attacked by cholera or small-pox, one more ground for trenching night-soil had been established, two fire-engines had been purchased and bye-laws prohibiting the construction of houses with roofs and walls of inflammable materials had been framed and brought into force. But several serious defects still existed, particularly under the heads of drainage, water-supply and disposal of the dead, which the Commissioners, with the means at their command, were trying their best to rectify.

The suggestions were—(1) To continue to allot year after year a fair share of the municipal income for correcting the sanitary defects which yet exist. (2) To properly utilise the sections of Part VI of the Municipal Act, which relate to building regulations, so that in future the irregular construction and the consequent crowding together of houses without proper provision for ventilation or for passages between them may be prevented. (3) To gradually metal the kutcha roads. (4) To strictly prohibit the making of all future excavations for taking earth, &c., an ample supply being procurable from the riverbed. (5) To improve the condition of the drains in Shaheb Bazar, and to provide a good set of drains (shallow saucer-shaped ones being much preferred) throughout this valuable and useful property. Also to try to induce householders to keep the drains inside their houses in working order. (6) To have all the tanks filled with river-water every year, inasmuch as it prevents stagnation by providing a fresh supply of water to the tanks; and to induce the well-to-do owners of private tanks to maintain them in proper order and cut down and remove the jungle from the banks of some of them. (7) To immediately stop the practice of throwing bones, carcasses of animals, and offal, &c., from the slaughter-house into the river. (8) To adequately increase the conservancy establishment and the number of carts, so that all the conservancy requirements of the town may be properly attended to. (9) To provide barrel carts for the removal of the fluid-house and kitchen refuse to the trenching ground for disposal. (10) To require the people to bring out at a stated hour all house rubbish, &c, and deposit it on the roadside for removal by the conservancy carts, and to have the existing accumulations of rubbish, &c., removed by the municipality at the cost of the owners. (11) To require the owners of the cattle-sheds to maintain them in a clean and inoffensive state. (12) To provide more public latrines at convenient places and to reserve some of them for the exclusive use of females, and to adopt for future latrines the iron structures called Hornbury's patent, and sold by Messrs. Burn and Company of Calcutta. (13) To have the latrines for the females attending to by mehtranis only. (14) To have not only the gumlahs and the drains, but also the walls, of the public latrines up to three feet from the floor tarred at least twice a month. (15) To properly carry out the dry-earth system in all the public latrines. (16) With the increase in public latrine accommodation, to make every endeavour to put down promiscuous defœcation. (17) To take steps to bring to light the existence of well-privies and to have them closed up. (18) To require the private mehters to bring all night-soil to the trenching grounds for disposal, and to warn them against disposing of it in the present manner. (19) To carry out the trenching system properly, and to try to prevail on the ryots to cultivate jute in such manured grounds in the rains and cold-weather crops such as mustard or wheat in the winter (2) To acquire cultivable land at the outskirt of the town, but within easy reach of the night-soil depôts for establishing one or more additional trenching grounds so that the delay and difficulty now experienced in removing the soil from privies at an inconvenient distance to the present trenching ground may be obviated. (21) After Part IX of the Municipal Act is extended to the whole of the town, to fully exercise the powers conferred on the Commissioners under its provissions of controlling the public and private privies. (22) To require the Conservancy Inspector to closely supervise the work of his department. (23) To have the slaughter-house on the bank of the river at once removed beyond the limits of the municipality, and to cancel the licenses of those slaughtering places as are found to be in a dirty and insanitary condition. (24) To establish a municipal slaughter-house with proper drainage, water-supply, and other conveniences, prohibit, the killing of cattle at any other place, inspect all the cattle brought there to be slaughtered and allow only such of them as are healthy to be killed for food consumption. (25) To lose no time in providing the new burial-ground at Ramchandpore, and to prohibit all further interments in the old one, and moreover have it planted with trees. (26) To request the Mahomedan community to level and fill in all sunken graves which render the public burial-grounds unsightly and insanitary. (27) To strictly forbid burials at places other than the public grounds, and to require the chowkidars attached to the public graveyards to see that the graves are dug sufficiently deep to allow of the chuppor, which is usually placed over a Mahomedan corpse, being at least 4 feet instead of 2½ feet from the surface of the ground. (28) To have the clothes, pillows, &c., of the dead burnt along with the body, and to adopt measures for the proper disposal of the pauper, &c., dead and strictly prohibit the throwing of

the bodies into the Pudma. (29) To stringently enforce all the provisions, particularly the penal ones, of the Compulsory Vaccination Act. (30) To appoint a man specially for detecting and reporting all evasions by the people of the requirements of the Compulsory Registration Act.

Action taken on the suggestions.—The suggestions have been included in the list of improvements to be effected, and they will be taken up as the funds at the disposal of the Commissioners will allow.

Pubna Town.—*Inspected in November* 1885.—The general condition of this town was bad, and parts of it, such as Salgaria and the neighbourhood of the dispensary, were in such a foul, insanitary state that cholera frequently broke out in those localities. It was full of innumerable filthy holes and depressions, which were very prejudicial to health. The drainage arrangements were very defective, and those under the head of conservancy were primitive and most unsatisfactory and objectionable. Unfortunately for the place, the only pure water supply, too, which had been diminishing day by day, and was already below the actual needs of the town, was threatened with utter failure in the near future, owing to the silting up of the river Ichamutty. On the whole, the sanitary welfare of the town required much looking after.

The suggestions were—(1) To employ in sanitary improvement as much as possible out of the sum of about Rs. 2,200, less Rs. 262 for the educational charges, which has become available to the municipality by its having been relieved of Police charges. (2) To consider the advisability of raising the taxes, in order that more funds might be available for rectifying the defects under the various heads of sanitation. (3) To fully utilise the sections of Part VI of the Municipal Act, which relate to building regulations. (4) To take care that the narrow lanes may not be used as a repository for the filth of the neighbourhood, and to provide all the roads with sufficient cross-drains and waterways to allow quick passage to water. (5) To try to come to some arrangement with the zemindar proprietor of the river-bed, so that opportunity may not be lost of advantageously utilising its sand and mud in filling up pits and holes. (6) To repair the pucca drains in the bazar, prevent the shop-keepers using them for the deposit of their house refuse, and to try to have the encroachments over them removed. (7) To undertake a survey of the town with the view of ascertaining the levels according to which drains can be made, inasmuch as an efficient system of drainage is an absolute necessity for the health of the town. (8) To provide properly constructed pucca wells at convenient places, protect them by masonry walls and platforms from inward drainage and infiltration of sewage, and supply them, as well as the existing public wells, with metal buckets and chains for drawing water. (9) To induce rich owners of tanks to have them re-excavated, thoroughly protected from pollution, and reserved for drinking purposes. (10) To at once put a stop to the obnoxious practice of resorting to the river-banks and their neighbourhood for defœcation. (11) To adequately increase the conservancy establishment and the number of carts so that the entire requirements of the town may be efficiently attended to. (12) To require the people to bring out all house rubbish, &c., and deposit it on the roadside for removal by the conservancy carts. (13) To have all the streets swept daily and the lanes and bye-paths at least twice a week, and to fully utilise the sweepings and the solid refuse from houses in filling up pits and hollows. (14) To require the owners of cattle-sheds to keep them in proper order, and not to allow the ordure to be accumulated within their premises. (15) To construct some public latrines at places as are most frequented by the lower orders of the people, reserve some of them for the exclusive use of the females, cause the latrines for the females to be attended to by mehtranis only, supply two gumlahs to each cell of the latrines, one for the fœces and the other for urine and washings, have their gumlahs, drains, and the walls up to three feet from the floor tarred twice a month and keep these places scrupulously clean, otherwise the people will not use them. (16) To take early steps to suppress the abominable well, privies, and require their owners to provide in their stead properly constructed surface privies with receptacles for the excreta. (17) To induce those private individuals who can afford the cost of construction to provide for themselves surface privies which could be cleaned easily. (18) With the provision of sufficient public and private latrine accommodation, to take steps to put down promiscuous defœcation. (19) To have the exposed private privies shut out from public view. (20) To establish a trenching ground at some convenient place, cause night-soil from all the privies to be brought there for burial, strictly prohibit private mehters from disposing of it otherwise, and carry out the trenching system properly. (21) To stringently work Part IX of the Municipal Act after it is brought into operation. (22) To require the owner of the principal private market to have the place swept daily, the drains kept free, and no accumulation of rubbish permitted in or near it, to see that the fish market is kept scrupulously clean and provided with a good supply of water, and to request the owners of the other markets to provide them with proper drains and floors, and take steps generally for improving their condition. (23) To consider the advisability of establishing a public slaughter-house on a small scale (24) To strictly prohibit intramural burials. (25) To insist on burials in the new Mahomedan graveyard being conducted methodically, the graves being dug in lines with fixed spaces between each grave and each row of graves, and the bodies buried at a sufficient depth to allow of the chupper, which is usually placed over them, being at least four feet from the surface of the ground. (26) To see that interments in the ground provided for the Mahomedan pauper, &c., dead are carried on strictly on the plan recommended in the case of the other ground. (27) To have the clothes, pillows, &c., of the dead burnt along with the body. (28) To put a stop at once to the very objectionable practice of throwing

uncremated or partially cremated bodies into the river. (29) To fully utilise the provisions of the Compulsory Vaccination Act and overcome the opposition of the people to the measure by the strict enforcement of its penal clauses, and to take immediate steps to put down the dangerous practice of inoculation by the strict application of the law on the subject. (30) To introduce the system of registering births, separate records being kept of it and returns submitted to this office for information.

Ranigunge Town.—*Inspected in November* 1885.—The sanitary arrangements of this town were not quite satisfactory. Many serious sanitary defects existed, particularly under the heads of drainage, water-supply, and conservancy. In fact, very little was found to have been done to improve its condition since it was last inspected in September 1879.

The suggestions were—(1) To employ annually, in accordance with the orders of Government on the subject, the greater portion of Rs. 1,600 set free by the municipality having been relieved of Police charges, together with a fair share of its remaining income, towards placing the town and particularly such portions of it as Dhobipara, Buteharpati, Sastigoria, &c., on a sound sanitary footing. (2) To take immediate steps to enforce Parts IX and X of the Municipal Act, which have already been introduced. (3) To fully utilise those sections of Part VI of the Act which relate to building regulations so that the crowding together of huts without proper provision for ventilation, scavenging, drainage, &c, may in future be prevented. (4) To put up more lights at places where their want is badly felt. (5) To plant trees on the sides of the principal streets. (6) To carry out the new drainage scheme to completion without unnecessary delay. (7) To have some good deep wells sunk at convenient places, protected from pollution of every kind, and specially reserved for drinking purposes (8) To induce the rich owners of some of the existing tanks to have them re-excavated, thoroughly protected and set apart for drinking and other domestic purposes. (9) To provide all the public wells with buckets and chains with pulleys for raising water, and prohibit the dipping of private vessels into them. (10) To abolish the present scheme of carrying out some of the conservancy arrangements by contract, and have the work undertaken by the municipality. (11) To adequately strengthen the conservancy establishment so that all the requirements under this important branch of sanitation may be properly attended to (12) To provide barrel carts for the removal of fluid kitchen refuse to the trenching ground for disposal where it cannot be carried off by pucca drains. (13) To have rubbish generally more carefully removed and utilised in filling up hollows and excavations, and useless tanks which become very foul when drying up. (14) To induce the people to store for manuring purposes cow-dung, &c., outside the town on their fields and not in their houses. (15) To have the distilleries removed, if possible, outside the limits of the municipality, so that their refuse water may not constitute a nuisance as at present. (16) To supply two gumlahs to each cell of the public latrines. (17) To have not only the drains but also the gumlahs and the walls of the latrines up to three feet from the floor tarred once a month. (18) To provide one or two latrines for the exclusive use of females who will not freely resort to those which are also frequented by the opposite sex. (19) To see that the public latrines are kept scrupulously clean and swept. (20) To provide more conveniently situated public latrines, and when this is done to try to put down promiscuous defœcation. (21) To take early steps to fully utilised the provisions of Part IX of the Municipal Act which have already been introduced. (22) To abandon the plan of trenching the night-soil in the vicinity of the public latrines, and to provide one or two sufficiently large grounds for this purpose in the outskirts of the town, but conveniently situated with reference to the blocks of privies from which the soil is to be conveyed to them. (23) To have the trenches for burying the night-soil dug in lines one foot deep and one foot wide, put only about six inches of night-soil into them, the remainder being covered with earth, and cultivate the ground, manured by the above process, with strong plants such as sugarcane, maize, &c. (24) To establish the proposed meat market as soon as possible, and consider the advisability of providing a public slaughter-house on a small scale with proper drainage, water-supply, and other conveniences, and prohibiting the killing of cattle at any other place. (25) To utilise the unoccupied spaces between each grave and each row of graves in the burial-ground for the Christians. (26) To stop the practice of throwing the pauper dead on the fields at a distance from the town, and have the bodies either burned or buried in accordance with the religious persuations of the diseased. (27) To strictly enforce the provisions of the Lodging-house Act, and see that these resting places are maintained in a clean and wholesome condition. (28) To carefully look after the sanitary condition of the coolie depôts and require their owners to keep them in proper order. (29) To fully utilise the provisions of the Compulsory Vaccination Act. (30) To strictly work the Compulsory Registration Act, particularly with reference to the penal provisions, specially appoint a person to detect and report all evasions by the people of the requirements of the law, and have the constables punished under section 6 of the Act whenever they omit to report the deaths occurring in their beats.

Hazaribagh Town.—*Inspected in December* 1885.—This municipality was in fair order, the roads were good and the drains generally open. Some improvements had been effected in the sanitary status since it was last inspected; but much more yet remained to be done in this direction. On the date of my visit there were, however, evidences to show that the Commissioners were anxious to do their best, with the means at their disposal, to improve the sanitation of the town.

The suggestions were—(1) To allot systematically year after year a legitimate share of the municipal income for placing the town, particularly such portions of it as Mulla Tola

and the outlying villages, on a thoroughly good sanitary footing. (2) To fully utilise the sections of Part VI of the Municipal Act, which relate to building regulations. (3) To provide a new street in the gowala quarter and some more in Khirgaon, and in constructing them to take steps to open up some of the crowded parts of these localities. (4) To have the encroachments over the pucca drains in Baribazar and Mungalbazar removed, prevent these drains being built over in future, continue the construction of the pucca walls on both sides of the main nullah or central drain until it is improved throughout its whole length, and to take steps to have the gowala quarter efficiently surface-drained. (5) To have the swamps in front of the Civil Surgeon's house under the artificial lake either made into a lake itself or thoroughly drained. (6) To supply all the wells, specially set apart for drinking, with buckets and chains for raising water, have the well in the Mahomedan burial-ground immediately closed against the supply of drinking water, and provide a few wells for the inhabitants of Khirgaon, and have them duly protected from all sorts of pollution and reserved for drinking and other domestic purposes. (7) To further increase the conservancy establishment so that all conservancy requirements of the town may be properly attend to. (8) To have all the lanes and bye-paths swept at least twice a week. (9) To construct some more public latrines at convenient places, and reserve some of them and one or two of the existing ones for the exclusive use of females. (10) To supply two gumlahs to each cell of the latrines, and have their gumlahs, drains and the walls up to 3 feet from the floor tarred twice a month. (11) To properly carry out the dry-earth system, and take steps to keep the privies scrupulously clean and sweet. (12) To endeavour to put down promiscuous defœcation. (13) To introduce Part IX of the Municipal Act on an early date so that the Commissioners will be in a position to thoroughly control and supervise the arrangements in connection with the public and private privies. (14) To stop the objectionable practice of throwing the night-soil on the surface of the ground to dry up, and substitute the trenching system in its stead. (15) To have not only the clothes of the deceased, but also the pillows, mats, &c., burnt along with the body. (16) To stringently work the Compulsory Vaccination Act, and retain the services of the vaccinator for the whole of the year instead of for a few months only. (17) To fully utilise the provisions of the Compulsory Registration Act, specially appoint a person to detect and report all evasions of the requirements of the law, and deal with the constables under section 6 of the abovenamed Act, whenever they omit to report births and deaths occurring in their beats.

Ranchi Town.—*Inspected in December* 1885.—The general sanitary condition of this town was satisfactory. The roads were good, and the shallow surface drains in order. There had been a good deal of tree-planting which will be a great comfort to the people when the trees grow to a fair size. There was, however, room for improvement under the head of conservancy, the arrangements under the other heads of sanitation being all that could have been desired.

The suggestions were—(1) To employ annually the greater portion of the saving effected by the municipality having been relieved of Police charges, together with a legitimate share of the remaining income, for improving the sanitary condition of the town. (2) To have the tank in the bazar near the thanna either maintained in proper order or filled up, and prohibit the fouling of the banks and the neighbourhood of the tanks from which drinking water is taken. (3) To take steps to prevent the soakage of foul water in the vicinity of the wells set apart for drinking. (4) To have all the lanes and bye paths swept at least twice a week, and see that they are not converted into repositories of filth, &c., of the neighbourhood. (5) To cause the public latrines to be kept scrupulously clean and sweep, and consider the advantages of adopting for future latrines the iron structures called Hornbury's patent and sold by Messrs. Burn and Company of Calcutta. (6) To have the drains, the receptacles, and the walls of the public latrines up to three feet from the floor tarred thrice a month, and see that the dry-earth system is properly carried out in all of them. (7) To bring into operation Part IX of the Municipal Act, as then the Commissioners would have complete control over the public and private privies. (8) To avoid deep trenching, and have the trenches dug in lines one foot wide and one foot deep and only six inches of night-soil put into them, the remainder being then filled with earth. (9) To take early steps to bring the Compulsory Registration Act into force, and when the law is introduced, to have it strictly worked and the overseer and tax-collectors required to detect and report all evasions of the requirements of the Act.

Chybassa Town.—*Inspected in December* 1885.—The sanitary arrangements of this municipality were not found quite satisfactory, many serious sanitary defects existing, particularly under the heads of conservancy and water-supply. In fact, it appeared that very little had been done to improve the sanitation of this town since it was last visited in January 1881.

The suggestions were—(1) To devote year after year in accordance with the orders of Government on the subject, the greater part of the saving effected by the municipality having been relieved of police charges, towards rectifying the grave sanitary defects which exist in it. (2) To introduce Parts VI and IX of the Municipal Act, as they provide most important sanitary regulations without the application of which it is almost impossible to maintain efficient sanitation. Also to bring into force a Code of bye-laws framed under the abovementioned Act. (3) To gradually deal with the encroachments over the pucca drains in the bazar so that the sweepers can properly clean out the drains, to cause either openings

to be made in masonry structures or have them curtailed in length, and to continue to completion the construction of the shallow saucer pucca drains in the Sudder Bazar. (4) To repair the breaches in the embankments of the Modhu tank and the temple tank, and remove the flowering plants and all vegetation from the banks of the latter, as it seems the one most likely to yield a good supply for drinking. (5) To have the sweepings which had been thrown near the lake and in its catchment area, and which still remains unremoved, at once burned and the ashes swept into the quarry holes near. Also to remove from its edges all vegetation, and plant, no more trees the leaves of which can find access to the water. (6) To request the owners of foul tanks either to maintain them in proper order or to have them filled up. (7) To erect pucca platforms round the public wells so that the soakage of foul water in their vicinity may be prevented, and to provide when funds permit two or three good deep wells at convenient places, have them reserved solely for drinking, supply them as well as the existing ones with buckets and chains, and permit no dipping of private vessels. (8) To strengthen the conservancy establishment as proposed, and see that surface cleansing is properly attended to. (9) To take steps for the proper disposal of refuse water and dead worms if silk filatures are to be started here. (10) To have the distilleries removed outside the town as the refuse discharge from them is liable to be offensive to the people. (11) To construct more public drains at convenient places, and have some of them reserved exclusively for the accommodation of females. Also to consider the advantages of introducing the iron latrines called Hornbury's patent and sold by Messrs. Burn and Company of Calcutta. (12) To supply two gumlahs to each cell of the public latrines, and have the gumlahs, the drains, and the walls up to three feet from the floor tarred at least twice a month. (13) To properly carry out the dry-earth system in the public latrines. (14) With the gradual increase in public latrine accommodation, to take steps to put down promiscuous defœcation as far as practicable. (15) To have all night-soil from private privies removed outside the town and buried in shallow trenches in lands which should afterwards be cultivated, rice fields doing very well in the dry season, higher lands in the rains. (16) To see that the soil from the public latrines is properly trenched in the ground assigned for the purpose. (17) To at once put a stop to the objectionable practice of burning bodies at random, and have the graves dug in lines with fixed distances between each grave and each row of graves. Also in the case of the Mahomedans, to cause the bodies to be buried at a sufficient depth to allow of the chupper, which is usually placed over the corpse being at least four feet from the surface of the ground. (18) To bring the Compulsory Vaccination Act V (B.C.) of 1880 into force, in order that vaccination may be more systematically pushed on. (19) To take early steps for introducing the Compulsory Registration Act into the town.

Action taken on the suggestions.—(1) Application has been made to Government for extending Part VI of the Municipal Act. (2) As soon as the abovementioned part of the law is introduced, a Code of bye-laws will be drawn up. (3) Orders have been issued to have the sweepings deposited near the lake burned at once and the ashes swept into the quarry holes near. (4) The owner of the temple tank has been asked to repair the breach in its embankment. (5) Provision has been made in the coming year's (1886-87) budget for improving the condition of the existing wells and for sinking new ones at places. (6) The conservancy establishment has been increased by two mehters and two carts, and will be further increased next year. (7) Steps are being taken to introduce Hornbury's patent iron latrines. (8) The receptacles in the public latrines will be tarred. (9) The night-soil from the private privies is being removed outside the town, and provision will be made for its proper disposal. (10) The night-soil from the public latrines is being properly trenched. (11) Provision will be made in the bye-laws to be framed under Part VI of the Municipal Act for the proper control and management of both burial and burning grounds. (12) A proclamation has been issued calling upon the inhabitants to keep their compounds clear of jungle, and offenders are now being prosecuted. (13) The "midden" question will receive early attention.

Purulia Town.—*Inspected in December* 1885.—The general condition of this municipality was fair, and the arrangements under several of the heads of sanitation were satisfactory. The Commissioners had been exhibiting commendable interest in its sanitary welfare, and many reforms were found to have been effected since it was last visited. The water-supply and conservancy arrangements, however, were susceptible of considerable improvement.

The suggestions were—(1) To continue to allot year after year a fair share of the municipal income for rectifying the sanitary defects which yet exist. (2) To make every endeavour to keep the lake clean, and effect this to a certain extent by cutting down the trees on the islands which at certain seasons are the resort of numerous water-fowl, whose droppings must be injurious to the purity of the water. (3) To induce the rich owners of some of the private tanks to have them re-excavated, properly protected from pollution, and reserved solely for drinking and culinary purposes. (4) To have all the wells, which are used for drinking, surrounded by masonry parapets, and provided with platforms, and drains to carry off spill-water from their neighbourhood, supply all of them with buckets and chains for raising water, and permit no indiscriminate dipping of vessels in them. (5) To further strengthen the conservancy establishments so that all conservancy requirements of the town may be completely attended to. (6) To provide barrel carts for the removal of fluid kitchen refuse to the trenching ground for disposal. (7) Not to allow cattle ordure to be accumulated within compounds of houses, but to require the people to have it either converted into

cakes for fuel or deposited on the fields as manure. (8) To prohibit tanning of hides within the town, and consider the advantages of having brick-kilns far off from it, as the holes dug are liable to become offensive in several ways. (9) To construct some more public latrines at convenient places, and have two or three of them reserved for the exclusive use of females. (10) To supply two gumlahs to each cell of the public latrines, and have the gumlahs, the drains, and the walls up to three feet high tarred twice a month. (11) With the gradual increase in public latrine accommodation, to take steps to put down promiscuous defœcation. (12) To carry out the trenching system properly, and keep the cultivation of the trenching grounds always in view. (13) To immediately stop the practice of burying at random, and enforce burials in regular rows with fixed intervals between each grave and each row of graves; and in the case of the Mahomedans see that the graves are dug sufficiently deep to allow the chupper to be at least four feet from the surface of the ground instead of 2 or 2½ feet. (14) To introduce the Compulsory Vaccination Act, and fully utilise its provisions when brought into operation. (15) To take early steps to bring the Compulsory Registration Act into force, and when this enactment has been introduced, specially appoint a person to detect and report evasions of its provisions by the people, and get the constables or other persons appointed to report the births and deaths occurring in their beats punished under section 6 of the Act when they omit to perform this duty.

Bankura Town.—*Inspected in December* 1885.—Since it was last inspected, much had been done to improve the sanitation of this municipality; but there were yet several sanitary defects, particularly under the heads of drainage and disposal of the dead, which called for rectification. It was interspersed with several filthy tanks called *gorias*, the foul emanations from which greatly tended to vitiate the atmosphere, and parts of it, such as Poddar mohullah and Tanti mohullah were in a very insanitary state attended with risk of disease. There was, however, evidence at my visit to show that the Commissioners were taking an intelligent interest in the sanitary concerns of the town committed to their care.

The suggestions were—(1) To continue to allot a fair share of the income for placing the town on a thoroughly sanitary footing. (2) To take opportunities on the occasion of fires, &c., to widen the narrow lanes. (3) To extend the pucca shallow side drains as much as possible through the town, particularly in lanes where there was a considerable discharge from bath-rooms and cook-houses. (4) To strictly prohibit all future encroachments over drains. (5) To take steps to remedy the defect noticed in respect of those houses which have no drains at all, their levels being much lower than those of the public drains. (6) To fill up all the *gorias* gradually, but perseveringly, with street sweepings and the solid refuse from houses, and to take up only so many of them at a time as could be dealt with within a short space of time. (7) To strengthen the conservancy establishment. (8) To provide barrel carts for the removal of the fluid kitchen refuse to the trenching ground for disposal. (9) To employ wheel-barrows for the effectual removal of all filth and sweepings from the narrow lanes and bye-paths. (10) Not to allow the cow-house dung and refuse to be accumulated within compounds of houses, but to require the people either to convert it into cakes for fuel or deposit on the fields as manure. (11) To have the refuse dye from lac factories carefully removed. (12) To provide some more public latrines at convenient places, and have some of them reserved for the exclusive use of females. (13) To supply two gumlahs to each cell of the public latrines. (14) To provide a pucca cess pool at the kutcherry latrine. (15) With the gradual increase in public latrine accommodation, to make endeavours to put down promiscuous defœcations. (16) To extend to the whole town the scheme, already partly initiated, of cleaning private privies through municipal mehters, and take early steps to introduce Part IX of the Municipal Act. (17) To establish one or more trenching grounds conveniently situated with reference to the blocks of privies from which the soil is to be conveyed to them, see that all night-soil from both public and private privies is removed there for burial, carry out the trenching system properly as in the jail garden, and, when a part of the ground is manured, have it cultivated. (18) To consider the advisability of establishing a municipal slaughter-house beyond the limits of the town, where all cattle might be killed, and the meat only brought to the town for sale. (19) To at once stop the practice of burying the bodies at random in the Mahomedan graveyard, and enforce burials in lines with fixed intervals between each grave and each row of graves. (20) To have the *akhras* or the private burial-ground of the Boistobs either registered or abandoned. (21) To fully utilise the provisions, particularly the penal ones of the Compulsory Registration Act, specially appoint a person to detect and report all evasions of the requirements of the law by people, and get the constables punished under section 6 of the enactment whenever they omit to report births and deaths occurring in their beats.

Suburbs of Calcutta.—*Inspected on 19th, 20th, 21st, 23rd and 24th November* 1885 *and* 31*st December*.—The sanitary status of this municipality was deplorably bad. Indeed it was found to have maintained the insanitary conditions of former years. Grave defects existed under almost every head of sanitation. The bustis were mostly overcrowded, badly drained, full of foul tanks and cess-pools, and extremely filthy—in short, they were in a horrible condition. The drainage arrangements were most unsatisfactory. There were no drains at all in several places, and of those that existed, the main channels were no better than deep ditches without proper levels and containing sewage of all kinds, and the side drains to the roads were for the most part out of order, blocked with rubbish and obstructions, and full of black, stinking slush in places. The arrangements obtaining under the head of conservancy were totally incommensurate with the needs of the town and very

objectionable in several respects. The water-supply question demanded the serious consideration of the Commissioners. The supply itself was insufficient and the water used for drinking and culinary purposes was in the majority of cases, and particularly in the bustis, of the worst quality, being little better than diluted sewage. Surface defilement was very great, and the soil in several places was saturated with all sorts of organic impurities. The arrangements in connection with burials were most objectionable and fraught with danger. In short, all the elements most prejudicial to health abounded in this municipality, to the reproach of the Commissioners and as a standing menace to the health of the metropolis of British India.

The suggestions were— (1) To carry out the important sanitary works for which provision has been made in the current year's (1886-87) budget, and the need for which is very great. (2) To administer the sanitary provisions of the Municipal Act with greater activity and closeness than at present. (3) To take steps to keep the Haldar Bagan gowala busti clean, remove all cow-dung from the drains, fill up all cess-pools and hollows in it, and properly protect the tank from inward drainage. (4) To adopt measures generally to improve the conditions of the Malapara bustee. (5) To prevent overcrowding in the Haritolla and Tantibagan bustis, and maintain them in a proper sanitary condition. (6) To provide the new Kobidanga busti in Garden Reach with proper roads and drainage. (7) Not to allow the Sitaram busti which had been improved and properly laid out, to deteriorate in condition. (8) To take early steps, improve the sanitary condition of the Gungaram and Woolfut Bagan bustees. (9) To prevent over crowding in and improve the sanitation of the busteo, outside the limits of the Kalighat temple. (10) To take immediate steps to open out roads for conservancy carts in the Narkul Bagan busti, raise the banks of the tanks, and see that rubbish is daily completely removed from it. (11) To make proper drainage and conservancy arrangements in Chitpore and Cassipore. (12) To improve the sanitary condition of the Nikaripara village. (13) To rectify the very grave sanitary defects which exist in the Bengali bazar and the Dhankheti and Jaradkhoti village, the property of the ex-King of Oude. (14) To convert as much as possible all deep side drains to roads into shallow surface drains. (15) To have all encroachments on the roads removed, and prohibit all future ones. (16) To put the roads in Sitaram bustee, into proper order. (17) To fill up all excavations as soon as practicable; call upon the zemindar of Sitaram bustee, to explain why he gave permission to the woman named Sonya to make an excavation to take earth from it to build a new house without the consent of the municipality, and take care that this irregularity does not occur anywhere. (18) To see that the process of filling up the tank in Peepulputty is carried on properly. (19) To provide the Shahibbagan and Rajabagan villages with an efficient system of drainage, keep the municipal drain in the former in working order, and see that in the latter the houses with their privies do not drain into tanks in proximity to them. (20) To throw more earth and cinders in the tank in Sealdah station which had been filled up, so that the sinkage may be made up and the drainage channel which runs across it act properly. (21) To remove, according to the provisions of the law, all encroachments over the drain on the south side of the road in Moulaly Durga which discharges its contents into the Mahratta ditch. (22) To put the Mahratta ditch into order and prohibit the throwing of rubbish into it. (23) To keep the drain passing the house of Mr. D. W. Manly, of No 1, Police Hospital lane, in a proper working order, and remove the black sludge from its bottom. (24) To have the Tantibagan, Nikasi drain and the blocked drain on the west side of the busti cleared of obstructions and made free to act. (25) To have the drain which receives the contents of the drainage of the east side of Garden Reach, Circular Road, and of Kali bagan abuting that road, cleared and put into order, and all filth in it removed. (26) To adopt means to prevent the evil arising out of the chief road of the Kalidanga busti, which crosses the public drain of the Garden Reach Road, which has been filled in for the purpose, blocking all drainage from the northwards. (27) To carefully enquire into the working of the establishment entertained for keeping the drains in Watgunge and Garden Reach clean and effective. (28) To prohibit the taking of earth from the drains in front of houses in Gungaram and Woolfut bagan bustis, and put the drains in order. (29) To attend to the drainage of the locality to the south-east of the temple in Kali Ghât, which seems to be generally towards tanks. (30) To see if the drainage of Modoo Haldar's bagan can possibly be improved. (31) To have the pucca covered drain in Sitaram busti, which passes parallel to the General Hospital compound and conveys the water of the maidan to Tolly's Nullah, cleared out (32) To have the planks over the drain passing through Pora bazar on the Peepulputty road removed and the filth cleared out, and carry out the suggestions offered for improving the drain in Surrup Poddar's bazar. (33) To take action, in communication with the Public Works Department, to remedy the evil arising out of the insufficient provision of waterway to the drainage near the Chitpore lock on the Sathpukur road. (34) To put to order the existing drains, and provide new ones wherever required, in Nikaripara village, Kasia bagan, Cassipore, and Barritolla, Chorguard, and Pan bagan bustis. (35) To do away with the present scheme of carrying out the conservancy arrangements by contract, and undertake the work themselves by means of their own salaried servants. (36) To pay serious and continuous attention to the early reclamation of the untouched bustis. (37) To see that the accumulations of foul water and slush in almost every house in the Shahebbagan busti are removed and properly disposed of. (38) To have road sweepings and rubbish carted away daily and not permitted to accumulate in places and form middens, wheelbarrows being used in lanes and bye-paths to which the carts cannot have access. (39) To get

all pits, hollows and excavations systematically, and properly filled up. (40) To require the people to bring out daily all house rubbish and kitchen refuse, and deposit them on the roads for removal by the conservancy carts. (41) To put a stop to the imposition of a double impost for frequenting public latrines, viz., the fee paid to the zemindar and the house service fee paid to the municipality. (42) To provide more public latrines at convenient places, more particularly in the bustis, construct them on approved plans, the plan of canal latrine No. 4 being preferable, and introduce Hornbury's patent iron latrines. (43) To provide separate latrines for the exclusive use of females instead of assigning compartments for them in latrines frequented by males. (44) To see that the existing latrines are kept scrupulously clean and the excreta and urine removed from them more frequently, initiate the manner in which the cleanliness of canal latrines No. 4 is attended to, and have those latrines which are contracted in accommodation either enlarged or domolished and other commodious ones erected in their place. (45) To supply a sufficient number of vessels for the night-soil in the latrine at Kalighat. (46) To increase the latrine accommodation at Kobidanga, and provide the existing latrine of the place with a pucca reservoir. (47) To see that the zemindari latrine in Dugdugipara in Banapukur is provided with vessels for receiving the solid fœces. (48) To have the vessels, drains and walls of the public latrines tarred at least once a month. (49) With the provisions of an adequate number of free public latrines, to take steps to put down promiscuous defæcation. (50) To set up urinals in the most thickly-populated parts of the municipality to obviate surface defilement. (51) To encourage the people to provide for themselves better constructed privies than the present wretched structures. (52) To have the cleaning process of the private privies more carefully attended to by the municipal mehters, and the condition of the privies more frequently inspected than at present. (53) To avoid deep pitting of night-soil and carry on the trenching system properly. Also to encourage cultivation of the trenching grounds. (54) To open additional conveniently situated trenching grounds, as the present ones are insufficient and not conveniently situated with reference to the privies from which soil is conveyed to them. (55) To see that fish in a bad state is not offered for sale in the Moulaly bazar, and prohibit the sale of beef of very inferior quality at the Kidderpore market. (56) To take steps to improve the condition of Kali bazar. (57) To have the pump attached to the tank from which water is supplied to the slaughter-house at Sonadanga repaired. (58) To arrange, as far as possible, that offensive and dangerous trades, such as soap and oil-boiling, tanning, &c., be carried on beyond municipal limits, as they add, more or less, to the other conditions injurious to health, which already obtain in the municipality. (59) To strictly prohibit the keeping of pigs in Haldar bagan in Tengra. (60) To see that the dung from the several sheep pens in Korryah busti is regularly removed for disposal, and not allowed to accumulate and rot till the cold weather, to be then sold as garden manure. (61) To see that all the tanneries in Mocheepara busti and in the Maniktolla burial-ground are provided with proper outlets for the discharge of refuse water, and that none of them empty into tanks from which water is taken for drinking. (62) To open out and maintain in efficient state Nos. 4 and 5 main drains in Kooryah busti and No. 7 drain in Dugdugipara, which receive the refuse discharge from the tanneries in those localities. (63) To have the drain near the tanneries of Messrs. Monteith and Company and Messrs. Zanini and Company cleared of stinking fluid, and put the public drain with which the above drain is connected into proper working order. (64) To have the evils described under the head of cattle-shed nuisance corrected generally and systematically. (65) To require the police to cut down the peepul-trees planted by them on the side of the tank behind the police phari at Kalighat. (66) To direct the zemindar of Sitaram busti to cut down the trees planted by him on the edge of one of the village tanks. (67) To take steps to prevent the fouling of the large tanks in the Nikaripara village, as well as that of the canal, from the drainage discharge into them of the huts along the banks in the case of the former, and of all the bustis in this village in that of the latter respectively. (68) To have some of the filthy private tanks in Kamerdanga dewatered and cleaned out by the owners or by the municipality at their expense, and the others as well as the excavation I saw filled up. (69) To see that earth is properly spread over the banks of the tank in Malye busti, which was commenced to be dug last year, so that inward drainage from the neighbouring houses on its north side may be prevented and the low land and several very bad holes on the south side filled up. (70) To look after the water-supply in Gungaram and Woolfutbagan. (71) To provide in the localities which will not be affected by the Calcutta water-supply scheme properly constructed and well-protected tanks, or good deep wells, provided with parapets, with buckets with chains and pulleys and with sloped platforms to carry off the spill water to the nearest drain, and have them exclusively set apart for drinking purposes. (72) To assign separate tanks for ablution, washing of clothes, &c. (73) To require the owners of such of the private tanks as are worth preserving to clean and protect them from future pollution and to have the others filled up. (74) To see that in the case of the Mahomedans the graves are dug deeper, so as to admit of the chupper being at least four feet from the surface of the ground. (75) To close the larger portion of the Maniktolla burial-ground which is close to the Circular Road, and is much overcrowded, the ground being used again and again, and prohibit further interments in the spoil bank thrown up from the canal, as this portion also is overcrowded, and, moreover, situated among buildings. (76) To abandon the Ekbalpore and Cossipore burial-grounds if they are found overcrowded, and close the Teljulla ground for Mahomedans and Boistobs, and the Cassipore graveyard as they are much overcrowded. (77) To bestow immediate attention to the question of

taking up lands outside the municipality for establishing new burial grounds. (78) To exercise more energetic and sustained supervision over the registration of births and deaths occurring within the municipality, so that accurate results may be obtained, and specially appoint a person to detect evasions of the provisions of the Compulsory Registration Act by the people and omissions to report births and deaths by the constables, and systematically prosecute defaulters, under the provisions of the law, on behalf of the municipality.

APPENDIX No. V.

STATEMENTS EXHIBITING PARTICULARS REGARDING THE VACCINE OPERATIONS OF THE YEAR 1885-86 AND OTHER INFORMATION CONNECTED THEREWITH.

STATEMENT No. I.—*Showing particulars of Vaccination in each*

Number.	Circles and Districts.	Population.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total Number of Persons Vaccinated. Males.	Females.	Total.	Average number of persons vaccinated by each vaccinator.	Primary Vaccinations. Total. Males.	Females.	Total.	Success. Under one year.	One year and under 6.
1	2	3	4	5	6			7	8			9	10
	Calcutta Circle of Superintendence.												
1	Calcutta	433,210	54,152	19	6,563	5,802	12,365	651	5,715	5,356	11,071	4,713	4,781
	Metropolitan Circle of Superintendence.												
1	Burdwan	1,224,454	511	29	16,411	15,035	31,446	1,084	16,408	15,031	31,439	3 617	20,575
2	Bankura	1,001,722	383	36	14,692	14,336	29,028	806	14,690	14,336	29,026	2,213	21,007
3	Birbhum	786,580	448	21	10,357	10,044	20,401	971	10,355	10,044	20,399	1,831	12,052
4	Midnapore	2,391,736	480	64	23,051	20,922	43,973	687	23,024	20,910	43,934	6,832	28,674
5	Hughli (including Serampore)	891,671	758	27	10,045	9,638	19,683	729	10,029	9,633	19,662	2,148	14,759
6	Howrah	529,753	1,139	11	7,651	7,468	15,119	1,374	7,043	7,466	15,109	2,664	11,397
7	24-Pergunnahs	1,360,012	679	45	21,950	20,611	42,561	946	21,945	20,610	42,555	5,600	32,718
8	Nuddea	1,649,959	507	37	23,566	21,515	45,081	1,218	23,566	21,515	45,081	5,864	33,722
9	Jessore	1,879,784	658	47	25,880	23,833	49,713	1,058	25,865	23,831	49,696	4,811	30,998
10	Khulna	1,068,256	516	35	23,144	21,349	44,493	1,271	23,144	21,349	44,493	4,598	24,478
11	Murshidabad	1,081,138	544	29	16,525	15,324	31,849	1,098	16,525	15,324	31,849	3,739	22,536
	Total	13,765,065	550	381	193,272	180,075	373,347	980	193,194	180,049	373,243	43,857	258 916
12	Bovine Vaccination Department Suburbs	251,439	10,032	3	109	104	213	71	55	42	97	62	13
13	Suburbs of Calcutta			12	7,445	6,386	13 831	1,153	5,461	4,971	10,432	2,710	6,025
	TOTAL OF METROPOLITAN CIRCLES	14,016,504	559	396	200,826	186,565	387,391	978	198,710	185,062	383,772	46,619	264,954
	Darjiling Circle of Superintendence.												
1	Dinajpur ... By licensed vaccinators	1,501,369	365	32	21,422	19,737	41,159	1,286	21,420	19,735	41,155	8,468	28,836
2	Maldah ... By ditto ditto	693,324	367	20	12,364	11,688	24,052	1,203	12,364	11 688	24,052	8,045	15,453
3	Rajshahye ... By ditto ditto	1,309 753	556	28	21,122	19,650	40,781	1,456	21,111	19,657	40,768	8,344	20,931
4	Rungpore ... By ditto ditto	2,076,841	598	32	25,989	24,311	50,300	1,572	25,989	24,311	50,300	6,920	40,476
5	Bogra ... By ditto ditto	724,212	484	19	9,627	9,095	18,722	985	9,627	9 095	18,722	4,641	13,734
6	Darjiling .. By paid agency	148,161	121	5	6,199	5,242	11,441	2,288	6,199	5,242	11,441	2,950	3,644
	By licensed ditto			2	1,134	1,053	2,187	1,093	1,134	1,053	2,187	849	1,211
7	Julpaiguri ... By ditto ditto	573,615	199	19	11,209	9,502	20,711	1,090	11,209	9,502	20,711	7,965	11,856
8	Purneah ... By ditto ditto	1,853,671	372	33	22,578	20,631	43,209	1,309	22,577	20,630	43,207	10,181	31,587
	Total ... By paid ditto	8,810,946	395	5	6,199	5,242	11,441	2,288	6,199	5,242	11,441	2,930	3,644
	By licensed ditto			185	125,445	115,676	241,121	1,298	125,431	115,671	241,102	55,413	173,084
	TOTAL OF DARJILING CIRCLE			190	131,644	120,918	252,562	1,329	131,630	120,913	252,543	58,363	176,728
	Ranchi Circle of Superintendence.												
1	Manbhum ... By licensed agency	969,330	253	34	16,914	15,757	32,671	961	16,854	15,717	32,571	9,134	21,832
2	Singbhum ... By paid ditto	390,249	122	10	5,532	4,812	10,344	1,034	5,532	4,812	10,344	714	6,124
	By licensed ditto			13	3,445	3,169	6,614	509	3,445	3,169	6,614	1,305	4,709
3	Hazaribagh ... By paid ditto	802,702	161	8 during recess.	106	91	197	25	106	91	197	75	101
	By licensed ditto			36	9,028	8,611	17,630	490	9,025	8,608	17,633	4,522	11,183
4	Lohardugga .. By paid ditto	1,213,433	128	19	10,625	8,995	19,620	1,033	10,615	8,991	19,606	3,806	13,848
	By licensed ditto			34	10,143	9,970	20,113	592	10,143	9,970	20,113	6,387	12,430
5	Political States Sirguja, Udaipur, Korea, Jashpur and Gangpur By ditto ditto	532,317	40	41	9,785	9,443	19,228	469	9,785	9,443	19,228	5,610	12,188
	Total . By paid ditto	3,938 031	112	20	16,263	13,898	30,161	1,040	16,253	13,894	30,147	4,595	20,073
	By licensed ditto			158	49,315	46,950	96,265	609	49,252	46,907	96,159	27,318	62,298
	TOTAL OF RANCHI CIRCLE			187	65,578	60,848	126,426	676	65,505	60,801	126,306	31,913	82,371
	Sonthal Perguunahs Circle of Superintendence.												
1	Sonthal Perguunahs ... By licensed agency	1,547,662	282	72	25,985	25,916	51,905	721	25,981	25,913	51,894	7,077	37,763
2	Bhagulpore . By paid ditto	1,903,033	446	18	15,987	15,129	31,116	173	15,987	15,129	31,116	4,632	25,273
	By licensed ditto			9	3,137	2,781	5,918	658	3,137	2,781	5,918	757	5,033
3	Monghyr ... By paid ditto	1,898,691	485	24	13,097	12,503	25,600	1,067	13,096	12,503	25,599	2,608	21,325
	Total . By do. ditto	5,349,386	392	42	29,084	27,632	56,716	1,350	29,083	27,632	56,715	7,240	46,598
	By licensed ditto			81	29,126	28,697	57,823	714	29,118	28,694	57,812	7,834	42,796
	TOTAL OF SONTHAL PERGUNNAHS CIRCLE			123	58,210	56,329	114,539	931	58,201	56,326	114,527	15,074	89,394
	Eastern Bengal Circle of Superintendence.												
1	Mymensing ... By licensed agency	2,991 854	478	75	39,427	36,131	76,558	1,007	39,427	36,131	75,558	7,906	49,380
2	Faridpore ... By ditto ditto	1,600,521	711	39	15,973	15,290	31,263	802	15,973	15,290	31,263	3,076	21,480
3	Noakhali .. By paid ditto	815,648	497	80	32,255	29,305	61,560	769	32,244	29,302	61,546	6,474	39,879
	By honorary ditto				784	691	1,475		784	691	1,475	171	1,009
4	Dacca ... By paid ditto	2,023,628	724	Work done during recess.	357	337	694	......	334	327	661	63	378
	By licensed ditto			58	24,477	23,298	47,775	824	24,477	23,298	47,775	4,148	33,824
5	Tipperah ... By paid ditto	1,488,280	601	1	127	105	232	232	127	105	232	23	193
	By licensed ditto			38	6,844	6,908	13,752	362	6,844	6,908	13,752	1,701	8,638
6	Backergunge . By paid ditto	1,184,446	585	29	6,305	5,716	12,021	414	6,298	5,715	12,013	2,309	7,610
	By licensed ditto			3	283	272	555	185	283	272	555	23	146
	By honorary ditto			..	109	121	230	......	109	121	230	26	190
7	Pubna .. By licensed ditto	1,275,424	692	36	21 394	19,523	40,917	1,128	21,393	19,522	40,915	7,664	20,479
	Total .. By paid ditto	11,379,810	500	110	39,044	35,463	74,507	677	39,003	35,419	74,452	8,929	48,060
	By licensed ditto			249	109,291	102,234	211,525	849	109,290	102,233	211,523	24,805	144,206
	TOTAL OF EASTERN BENGAL CIRCLE			359	148,336	137,697	286,032	797	148,293	137,682	285,975	33,734	192,266

Circle of Superintendence during the year 1885-86.

...ul.		Re-vaccination.							Percentage of successful cases.		Religion of the number vaccinated.				Persons successfully vaccinated per 1,000 of population.	Average annual number of persons successfully vaccinated during the previous five years.		Average number of deaths from small-pox during the previous five years.	
		Total.			Successful.						Total number vaccinated of—								
Above 6 years.	Total at all ages.	Males.	Females.	Total.	Under 1 year.	1 year and under 6.	Above 6 years.	Total at all ages.	Primary.	Re-vaccination.	Hindus.	Mahomedans.	Christians.	Other races.		Number.	Ratio per 1,000 of population.	Number.	Ratio per 1,000 of population.
11	12	13			14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
682	10,176	848	446	1,294	...	...	167	167	96·36	14·68	8,030	3,561	676	95	23·87	8,462	19·33	163	·37
7,242	31,434	3	4	7	..	...	......	......	99·98	......	25,676	5,769	1	......	25·67	...	......	86	·07
5,762	28,982	2	......	2	...	...	...	...	99·87	......	27,974	1,051	...	3	28·93	..	...	35	·03
6,502	20,385	2	...	2	...	...	......	......	99·93	......	16,988	3,413	...	......	27·91	..	..	16	·02
8,070	43,576	27	12	39	.	..	20	20	99·67	51·28	42,120	1,853	...	...	18·22	...	...	623	·26
2,734	10,641	16	5	21	...	1	14	14	99·91	66·66	16,630	3,053	..	......	22·04	...	...	29	·03
1,034	15,095	8	2	10	.	..	5	5	99·90	50·00	12,796	2,320	3	...	28·50	...	..	14	·02
4,196	42,514	5	1	6		...	6	6	99·91	100·00	26,336	15,856	329	......	31·26	......	..	52	·03
5,126	44,952	......	......	.....	..	...	.	......	99·83	...	17,808	27,122	151	...	29·00	......	..	81	·05
7,683	40,492	15	2	17	.	...	6	6	99·62	35·29	20,171	29,533	9	...	26·33	......	.	20	·01
15,366	44,442	......	......	...	...	...	...	...	99·88	...	16,715	27,770	8	......	41·60	..	...	11	·01
5,536	31,811	....	......	......	...	.	...	......	99·88	..	15,546	16,303	...	...	29·42	...	......	122	·11
69,551	372,324	78	26	104	...	1	50	51	99·83	49·03	238,760	134,083	501	3	27·05	349,267	25·37	1,089	·07
13	78	54	62	116	...	6	14	50	95·12	60·24	68	16	129	......	·50	566	11·26	...	..
932	9,667	1,984	1,415	3,399	...	29	1,702	1,731	97·49	56·79	9,252	4,457	122	...	45·33	10,435	41·50	100	·39
70,496	382,069	2,116	1,503	3,619	.	36	1,796	1,832	99·77	56·63	248,080	138,556	752	3	27·38	360,266	25·70	1,189	·08
3,753	41,057	2	2	4	...	1	...	1	99·88	25·00	19,314	21,753	20	72	27·34	...	..	11	·02
545	24,043	......	...	...	...		...	...	99·96	...	11,992	12,025	...	35	34·67	...	...	49	·07
2,306	40,581	11	2	13	...	.	7	7	99·84	53·84	7,193	33,587	1	...	30·98	...	...	12	·009
2,713	50,109	..	...	...	...	..	...	...	99·92	...	18,921	31,300	38	41	24·72	......	...	14	·006
335	18,710	...	...	.	..		...	......	99·94	...	3,136	5,586	...	.	25·83	...	.	5	·006
3,685	10,279	...	......	...	...	...	...	......	100·00	...	10,129	129	7	1,176	69·57	......			
122	2,182	...	...	.	..	...	...	......	99·77	...	1,604	273	...	310	14·72		...	21	·14
640	20,461	......	...	...	...	...	...	......	99·56	...	12,614	7,557	1	539	35·67	......	..	49	·08
1,331	43,099	1	1	2	...	...	..	......	99·87	...	27,222	15,986	1	...	23·50	..	...	112	·06
3,685	10,279	......	......	...	...	.	.	...	100·00	...	10,129	129	7	1,176	1·16	91,189	10·34	...	..
11,745	240,242	14	5	19	...	1	7	8	99·86	42·10	101,996	138,067	61	997	27·26	189,945	21·56	...	...
15,430	250,521	14	5	19	..	1	7	8	99·87	42·10	112,125	138,196	68	2,173	28·43	281,134	31·90	303	·03
1,203	32,469	60	40	100	..	...	66	66	99·72	66·00	31,312	1,342	17	......	33·56	...	..	54	·05
3,269	10,107	...	...	...	...	...	...	......	99·94	...	10,310	7	27	......	25·89	...	..	68	·17
417	6,521	......	.....	.	...	..	...	...	98·78	......	6,470	22	120	2	16·70	..	..		
3	179	......	.....	......	...	..	...	...	94·21	......	171	26	...	......	·22	.	..		
																		247	·30
1,770	17,425	3	3	6	...	.	2	2	99·70	33·33	15,876	1,758	5	......	21·71	...			
1,436	19,090	10	4	14	1	5	6	12	99·83	85·71	18,451	1,155	14	...	15·36	......	..	444	·35
1,077	19,900	......	......	...	...	...	...	...	99·60	.....	19,049	63	692	309	16·00	...	..		
1,345	19,143	......	...	......	...	...	......	......	99·74	......	19,174	54	...	......	35·96	......	.	Not under registration.	
4,708	29,576	10	4	14	1	5	6	12	99·83	85·71	28,932	1,188	41	...	7·46	38,472	9·77	...	...
5,842	95,458	63	43	106	...		68	68	99·63	64·15	91,881	3,239	834	311	24·25	96,645	24·54	...	...
10,550	124,834	73	47	120	1	5	74	80	99·68	66·66	120,813	4,427	875	311	31·71	135,117	34·31	813	·20
6,859	51,690	8	3	11	...	1	......	1	99·64	9·09	23,031	2,913	126	25,835	33·40	......	.....	124	·08
1,177	31,082	......	......	......	...	...	......	...	99·80	...	28,650	2,338	2	126	16·38	......	..	554	·29
127	5,917	......	......	......	...	...	......	......	99·98	......	5,388	500	2	28	3·10	......	...		
1,574	25,507	1	......	1	...	...	...	......	99·68	......	22,037	1,988	4	1,571	13·43	...	...	438	·23
2,731	56,589	1	......	1	...	...	......	.....	99·79	......	50,687	4,326	6	1,697	10·57	58,268	10·89	...	..
6,986	57,616	8	3	11	...	1	...	1	99·68	9·09	28,419	3,413	128	25,863	10·77	50,403	9·42	......	..
9,737	114,205	9	3	12	...	1	...	1	99·74	8·33	79,106	7,739	134	27,560	21·34	108,671	20·31	1,116	·20
18,155	75,441	......	......	......	...	...	......	......	99·90	......	17,282	57,123	1	1,152	25·21	......	...	415	·13
6,702	31,258	......	......	......	...	...	......	......	99·98	......	16,611	14,380	266	......	19·52	...	...	232	·14
15,035	61,388	11	3	14	...	1	2	3	99·77	23·07	14,713	46,596	251	......	75·26	...	......	555	·71
219	1,459	......	......	......	...	...	......	...	98·91	......	603	871	1	...	1·78	...	..		
177	618	23	10	33	...	3	11	14	96·26	42·42	256	428	8	.....	·31	......	.....		
																		149	·07
9,749	47,721	......	......	......	...	...	......	......	99·88	......	17,866	29,782	127	......	23·58	......	......		
16	232	......	......	......	...	...	......	......	100·00	......	31	201	...	......	·15	.....	.....	372	·24
3,265	13,094	......	......	......	...	...	......	......	99·57	......	4,346	9,406	...	......	9·20	......	......		
1,975	11,954	7	1	8	...	1	......	1	99·50	12·50	2,787	9,234	...	......	10·09	...	......		
380	555	......	......	......	...	...	......	......	100·00	......	518	37	...	......	·46	......	...	103	·08
14	230	......	......	......	...	...	......	......	100·00	......	4	226	...	......	·19	......	...		
3,440	40,592	1	1	2	...	2	......	2	99·80	100·00	12,588	28,320	...	...	31·82	..	......	6	·004
17,203	74,192	41	14	55	...	5	13	18	99·70	33·33	17,789	56,459	259	....	6·52	156,244	13·73	...	......
41,939	210,950	1	1	2	...	2	......	2	99·86	100·00	69,818	140,160	395	1,152	18·53	157,815	13·87	...	......
59,142	285,142	42	15	57	...	7	13	20	99·82	35·71	87,607	196,619	654	1,152	25·05	314,059	27·60	1,862	·16

STATEMENT No. I.—*Showing particulars of Vaccination in each*

Number.	Circles and Districts.	Population.	Average population per square mile.	Average number of v[...] employed throughout [...]	[N]umber of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary Vaccination.				
									Total.			Success	
					Males.	Females.	Total.		Males.	Females.	Total.	Under 1 year.	1 year and under 6.
1	2	3	4	5	6			7	8			9	10
	Orissa Circle of Superintendence.												
1	Cuttack ... { By paid agency By licensed ditto }	1,667,990	476	{ 30 12	27,979 1,647	23,369 1,275	51,318 2,922	1,712 243	27,979 1,647	23,369 1,275	51,348 2,922	4,571 514	37,830 2,277
2	Balasore ...	160,972	592	2 from Cuttack.	323	269	592	296	323	269	592	87	359
3	Angul ... } By paid ditto ...	101,903	115	1 ditto	610	488	1,098	1,098	610	488	1,098	45	915
4	Tributary Estate of Baramba and Narsingpur.	62,355	187	3 ditto	888	833	1,721	574	888	883	1,721	29	1,348
	Total ... { By paid agency By licensed agency	2,002,226	400	{ 30 12	29,800 1,647	24,959 1,275	54,759 2,922	1,825 243	29,800 1,647	24,959 1,275	54,559 2,922	4,732 514	40,452 2,277
	TOTAL OF ORISSA CIRCLE ...			42	31,447	26,234	57,681	1,378	31,447	26,234	57,681	5,246	42,729
	Behar Circle of Superintendence.												
1	Patna ... { By paid agency ... By licensed ditto ...	1,524,038	740	{ 36 from Shahabad during recess 91	522 11,090	457 10,660	979 21,750	27 239	522 11,088	457 10,650	979 21,747	190 1,654	662 19,216
2	Shahabad... ... By paid ditto ...	1,845,827	424	56	12,422	12,027	24,449	44	12,374	11,992	24,366	1,918	18,028
	Total ... { By paid agency ... By licensed ditto ...	3,369,865	526	{ 56 91	12,944 11,090	12,484 10,660	25,428 21,750	454 239	12,896 11,088	12,449 10,659	25,345 21,747	2,108 1,654	18,690 19,216
	TOTAL OF BEHAR CIRCLE ...			147	24,034	23,144	47,178	321	23,984	23,108	47,092	3,762	37,906
	GRAND TOTAL OF ALL CIRCLES. { By paid agency . By licensed ditto ...	40,209,987	389	{ 306 1,157	147,451 519,186	131,970 485,567	279,421 1,004,753	913 868	144,465 519,020	129,994 485,488	274,459 1,004,508	38,029 161,395	188,336 702,793
	Total ..			1,463	666,637	617,537	1,284,174	878	663,485	615,482	1,278,967	199,424	891,129

OFFICE OF SANITARY COMMR. FOR BENGAL,
The 15th May 1886.

STATEMENT No. II.—*Showing the cost of Vaccination in*

	Circles.	Establishment.														Exp	
		Superintendents.	Deputy Superintendents.	Native Superintendents.	Inspectors.	Total.	Head-vaccinators.	First class vaccinators.	Total.	Second and third class vaccinators.	Apprentices.	Total.	Clerks.	Menial servants.	Total.	Pay of establishment.	Travelling allowance.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
																Rs. A. P.	Rs. A. P.
	Calcutta ...	1	2	...	...	3	3	5	8	14	...	14	1	1	2	6,191 15 11	720 0 0
	Metropolitan ...	1	4	...	39	44	...	..	...	...	...	...	3	6	9	27,647 2 5	10,153 2 9
	(Bovine Vaccination Department) Suburbs.	...	...	...	...	...	1	...	1	3	...	3	1	7	8	1,697 0 4	360 0 0
	Suburbs of Calcutta ...	...	1	...	3	4	...	12	12	...	...	...	...	...	...	3,248 14 7	360 0 0
	TOTAL OF METROPOLITAN CIRCLES ...	1	5	...	42	48	1	12	13	3	...	3	4	13	17	32,693 1 4	10,873 3 9
	Darjiling ...	1	2	...	11	14	1	5	6	...	...	...	1	4	5	31,070 11 2	3,587 1 3
	Ranchi ...	1	1	3	4	9	1	...	1	33	...	33	1	3	4	12,228 0 0	1,588 0 0
	Sonthal Pergunnahs ...	1	...	...	10	11	3	6	9	36	...	36	1	2	3	9,097 15 5	3,541 9 2
	Eastern Bengal ...	1	1	1	5	8	6	17	23	59	34	93	2	3	5	15,307 0 0	3,391 0 0
	Orissa ...	1	...	...	2	3	3	11	14	15	4	19	1	2	3	5,418 14 5	1,399 13 6
	Behar ...	1	...	2	2	5	4	10	14	33	13	46	1	1	2	9,114 8 9	1,979 8 0
	TOTAL OF VACCINATION CIRCLE ...	8	11	6	76	101	22	66	88	193	51	244	12	29	41	1,21,022 9 0	27,080 2 8
	Municipalities ...	...	...	...	...	...	...	...	...	206	...	206	...	...	...	11,154 1 3	......
	GRAND TOTAL ...	8	11	6	76	101	22	66	88	399	51	450	12	29	41	1,32,176 10 3	27,080 2 8

OFFICE OF SANITARY COMMR. FOR BENGAL,
The 15th May 1886.

CHAPTER XIII.

Howrah.

I—Situation, boundaries, area, population and administration.

The district of Howrah is situated in the south-east of the Burdwan Division. It lies between 22°13′ and 22°47′ north latitude, and between 87°51′ and 88°22′ east longitude. It is bounded on the north by the Arambagh and Serampore subdivisions of the Hooghly district; on the east by the Barrackpore, Alipore and Diamond Harbour subdivisions of the 24-Parganas district; on the south by the Tamluk subdivision of Midnapore; and on the west by the Tamluk and Ghatal subdivisions of the latter district, and the Arambagh subdivision of the Hooghly district. The boundaries are partly natural and partly artificial. On the west and south-west the river Rupnarayan, and on the east and south-east the river Hooghly, constitute natural boundaries, while on the north the boundary is formed by the Bally khal and an artificial line marking the southern limit of the Hooghly district. Its extreme length from north to south is 39 miles, and its extreme width from east to west is 33 miles.

The area of the district, which is the smallest in Bengal, is 522 square miles, and its population, according to the latest census returns is 1,098,867, showing a density of 2,105 per square mile.

The headquarters of the district is at Howrah, situated on the right bank of the river Hooghly. This is also the chief town in respect of both population (224,873) and commercial importance.

The district is divided for administrative purposes into two subdivisions and fifteen thanas, the names and population of which are shown in Appendix I to this chapter.

The district is in charge of a Collector, who administers it with the help of the usual complement of officers and staff. This officer is also the District Magistrate. A portion of the administration relating to Local Education, Public Health, Buildings and Communications is under the control of a District Board, under which body there are two Local Boards, one in each subdivision. There are also two municipalities in the district managing the affairs of the municipal areas.

II—Physical features.

In shape the district is an irregular triangle, bounded on two sides by the great rivers Hooghly and Rupnarayan, the apex of which lies at their confluence near Fort Mornington. Hemmed in between the Hooghly on the east and the Rupnarayan on the west, and intersected by the Damodar, the Howrah district consists of a flat alluvial plain, with a gradual almost imperceptible fall to the south and south-east, the general flow of drainage being consequently in the same direction.

The whole area covered by the district is a result of the activities of these rivers and their branches, and, as may be expected, comprises two main divisions—(1) the raised river banks, and (2) the large marshes or lowlands which separate them.

Three distinct tracts may be recognised, each associated with one of the rivers mentioned above, with a depression in between, viz., an eastern tract stretching away to the west from the Hooghly and its branch, the Saraswati; a central tract lying on either side of the Damodar and its branch, the Kana Damodar; and a western tract, extending eastwards from the Rupnarayan.

In the area comprising the raised river banks are situated most of the villages, which are usually surrounded by a luxurious growth of bamboos, palms and fruit trees; while the lowlands from rich rice-fields, which stretch to the verge of the reed-bordered marshes which cover the lowest portions of the depressions between the rivers. The interior of the country is thus broken up into extensive swamps, which form vast sheets of water in the rains. In the area traversed by the Rajapur drainage channel the country is so low that for miles not a single house or tree is visible, the monotony of this extensive expanse of water being broken only by the banks of the drainage channel.

The portion of the district lying to the south of the Bengal-Nagpur Railway presents characteristics somewhat different from those already noticed. In this area the rivers become broader, the currents stronger due to tidal action, and the land more fluvial in character. The villages are spaced out at greater distances, and the country is protected from inundation by long embankments. Roads are few in number, and the chief means of communication are boats and paths along the embankments. Frequent breaches of the embankments occur when the rivers are in flood, and the water, finding its way through these and through numerous creeks, covers the whole country, giving the effect of an inland sea, from which the scattered villages stand out like islands.

III—River system and marshes.

The district is drained by three large rivers, of which the Hooghly and the Rupnarayan skirt it on the east and west, and the Damodar runs through it. These, together with numerous khals, which are either tributaries or off-shoots of the main streams and intersect the country in all directions, comprise the river system of the district, the entire system being subject to the influence of tidal action.

The principal rivers are :—

(1) Hooghly.

(2) Rupnarayan.

(3) Damodar.

(4) Saraswati and its continuation, the Sankrail khal.

(5) Kana Damodar and its continuation, the Sijbaria khal.

(6) Madaria khal.

(7) Bally khal.

A description of these rivers will be found in Appendix I to Chapter II in which the characteristics of the more important rivers in the province have been briefly described.

Owing to its configuration the district contains a large number of marshes, which cover the lowlying depressions formed between the raised strips marking the river channels. Three distinct groups of such marshes may be recognised; the first termed the Howrah swamps, lying between the raised banks of the Hooghly and the Saraswati, the second called the Rajapur swamps, between the Saraswati and the Kana Damodar, and the third, known as the Amta swamps, between the Kana Damodar and the Damodar. One of the chief problems of the district is to devise a proper system for draining these marshes, and the question has formed the subject of many drainage schemes dating as far back as 1870.

IV—Climate and rainfall.

The climate of the district is very similar to that of Calcutta, being hot and moist. During the summer months the heat, though great during the day, is alleviated in the afternoon by a southerly sea-breeze. Hail-storms sometimes occur. This period is fairly healthy and not particularly

unpleasant. The monsoon sets in by the middle of June and continues up to the middle of September. During this period the temperature is lower, but in September, owing to heavy rainfall and high humidity, the heat becomes oppressive. The climate in the cold weather is pleasantly cool and fairly bracing. The most unhealthy part of the year is the transition period between the rains and the cold weather, when, due to stagnant pools and decaying vegetation, malaria is rife and the general health is at its lowest.

The average annual temperature is 78·8°. The mean temperature in January is 66·5° and in April 85·6°. The average daily variation is limited within a range of 16·2°.

The normal annual rainfall is 60·9 inches, of which only about 4·1 inches fall during the months from November to April.

V—Floods and inundations.

The district being very little raised above mean sea level and being traversed by three large rivers, would, under natural conditions, be subject to very heavy flooding, but this is prevented to some extent by the presence of long embankments running along the banks of the rivers and helping to keep the flood waters from spreading over the land. Notwithstanding this, the whole area, except the strip in the east and south-east lining the banks of the Hooghly, is more or less submerged during high floods. The most destructive inundations occur when the rivers rise very high owing to excessive rain, and, being met by high tides, are unable to discharge their waters quickly.

The extent to which the district is subject to inundation is indicated on a sketch map (Plate X), areas usually inundated at intervals of from one to three years, those inundated at intervals of about five years, and those subject to occasional inundation being shown in different colours.

VI—Soils, crops and irrigation.

The whole district is covered with an alluvial soil, which varies from sand in the river beds to sticky mud in the interior, along the silted-up streams, and mud in the swamps. Clayey and heavy loamy soils prevail in the north, and lighter loams in the south, where the deposits are more recent. Several classes of soil are known: *bele*, or sandy soil; *entel*, or clayey soil; *penko*, or muddy soil; and *bhasa* or marshy soil.

Winter rice and jute are the staple crops. Other crops grown are sugarcane, autumn rice, maize, pulses and oilseeds. Market gardening of fruit and vegetables is also extensively undertaken with a view to meeting local demands and those of the adjoining city of Calcutta.

Artificial irrigation is practised, but not on an extensive scale, as the land being lowlying and rainfall abundant, it is not ordinarily required, except for certain special crops (sugarcane, potatoes, brinjals, betel-leaf and spring rice), the cultivation of which either takes place after the rains or is spread over several seasons. The water used for irrigation is obtained from rivers, khals and drainage canals, and also from jheels, tanks and, to a small extent, wells. In all cases it is raised by hand and allowed to gravitate on to the fields. There is no canal irrigation in the district.

VII—Industries, hats and melas.

The industrial activity of the district is concentrated in its north-eastern corner, being confined to the strip of country extending along the western bank of the Hooghly from Bally in the north to Uluberia in the south. Apart from this area the rest of the district is mainly agricultural, and shows very little signs of industrial activity on a large scale. The factory industries, which are represented by 210 factories, are almost entirely confined to the comparatively small area noticed above, the only exception being the existence of 10 rice mills at Shampur, situated in the south of the district on the western bank of the Damodar. The factories include cotton and

jute mills and presses, rice, oil and flour mills, ship-building and general engineering works, railway workshops, metal, paint and rope works, and several miscellaneous factories. The distribution of the factories, excluding the 10 rice mills mentioned above, is 125 within the limits of the City of Howrah, 29 in Bally, 26 in Malipanchgarah, 7 in Uluberia, 6 in Sankrail, 4 in Bowria, 2 in Jagacha and 1 in Domjur. The names given above refer to thana areas.

Of the non-factory industries silk-spinning and pottery-making are carried on fairly extensively on a small scale. Steel implements are also manufactured by hand in small quantities.

About 8·4 per cent. of the total population is solely engaged in industries.

As is the case in all districts of the province the sale of local produce and the purchase of every-day necessities take place at rural markets called "hâts," the duration of which is limited to a day or less, and at more pretentious fairs called "melas," which may extend into several days or even weeks. Hâts, which are usually held weekly, but may in the more thickly populated areas be held bi-weekly or even daily vary greatly in size, the attendance ranging from a modest gathering of 50 or so to as much as several thousands. Melas are periodic gatherings usually taking place annually, although in some cases two or three melas may be held during the year at the same place. Excluding those of minor importance there are 68 hâts and 12 melas in the district. The particulars of these are given in Appendix II to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate X), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

VIII—Waterways, steamer services and ferries.

The most important navigable waterways in the district are the rivers Hooghly, Damodar and Rupnarayan. Of these the Hooghly and Rupnarayan are navigable all the year round throughout their course in and along the district, while the Damodar ceases to be navigable after the rains, except in the lowest section from the mouth of the Gaighata khal to its own outfall into the Hooghly. During spring tides small boats can go up to Amta. Small boats also ply in the rains and winter months along the numerous khals intersecting the district. Of these khals the most important are the Bally, the Sankrail, the Kalsapa, the Mithkundu, the Pukuria, the Banspati, the Madaria, the Gaighata and the Bakshi. These are of varying lengths and depths, and are connected with one or other of the larger waterways. The Midnapore Locked Canal, reach VIII, though navigable has lost its importance since the construction of the Bengal-Nagpur Railway line from Calcutta to Kolaghat.

A large amount of traffic in passengers and goods is conveyed by small native boats along all the main waterways of the district, while on the Hooghly, the Rupnarayan and (in the rains) the Damodar heavier boats may be seen bringing down rice and other agricultural produce, and carrying up kerosine oil, etc.

Several steamer ferry services ply daily between Calcutta and places in this district. With the exception of one, all these services are run by Messrs. Hoare Miller and Co., the exception being the service between Bandarghat and Ahiritola (Nimtolla Ghat), which is run by the Ghatal Steam Navigation Company.

Excluding minor private ferries there are altogether 15 recognised public ferries in the district, all controlled by the District Board. Particulars of the more important of these are given in Appendix III to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate X), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

IX—Railways.

Railway communication within the district is provided by eight sections of railway with a total length of about 84·75 miles. The location of these railways is shown on the skeleton sketch map of the district (Plate X), and a few of the more important particulars relating to them are given in Appendix IV to this chapter. As will be seen from the map the entire eastern portion of the district, extending to the Damodar river on the west and the Bengal-Nagpur Railway line on the south, is well served by its railways, which run through all the important industrial centres, and are also so placed that most of the country is within easy reach of them. On the other hand, in the rest of the district, comprising in the north a strip on the west of the Damodar, and in the south the large tract between the rivers Hooghly and Rupnarayan, the railways do not serve the country to the same extent, there being only a single railway line, which cuts across the centre of the tract. The district contains approximately 16·23 miles of railway in respect of each 100 square miles of country.

X—Existing road system.

The road system at present in existence in the district comprises an approximate total length of 2,060 miles of metalled and unmetalled roads of all classes, for the upkeep of which several authorities are responsible. The mileage of the roads under each administrative authority in the district and the average annual expenditure incurred on their upkeep is given below. The figures shown have been obtained from the respective authorities, but must be taken as being only approximately correct, as in many cases the records and accounts are not kept in such a way as to make it possible to obtain accurate information under the separate heads into which the roads have been divided. They are, however, of sufficient accuracy to serve the purpose of the present report :—

Class.	Authority responsible for upkeep.	Metalled roads.			Unmetalled roads.		
		Mileage on 31st March 1937.	Total annual expenditure being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.	Mileage on 31st March 1937.	Total annual expenditure being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.
1	2	3	4	5	6	7	8
		Miles.	Rs.	Rs.	Miles.	Rs.	Rs.
I	*Government roads* maintained by the Communications and Works Department.	24 (*a*)	86,847	3,566	1	116	232
II	*District roads* maintained directly by the District Board.	70 (*b*)	34,478	490	237	14,673	62
III	*Subdivisional roads* maintained by Local Boards working under the control of the District Board.	..	..	..	596	17,372	29
IV	*Urban roads* maintained by municipalities.	107	Not available.	..	41	Not available.	..
V	*Village roads* maintained by Union Boards.	35	Do.	..	949	20,399	22
	Total ..	236	1,21,325		1,824	52,560	

Note.—(a) Details shown below :—

Serial number.	Name of road.	Average width.	Length of section.	Average annual expenditure.		Maintenance cost per square yard.
				For whole length.	Per mile.	
		Feet.	Mile.	Rs.	Rs.	Rs.
	I.—Bitumen or tar grouted.					
(a)	Grand Trunk Road—North ..	23·54	4·651	35,215	7,571	0·54
(b)	Grand Trunk Road—South ..	20·00	0·835	11,475	13,742	1·13
	Total ..		5·486			
	II.—Bitumen or tar painted.					
(a)	Grand Trunk Road—North ..	23·75	0·552	1,242	2,250	0·16
(b)	Grand Trunk Road—South ..	18·83	2·606	16,581	6,363	0·57
(c)	Foreshore Road	12·00	1·036	2,503	2,416	0·34
(d)	Orissa Trunk Road	9·00	3·000	6,764	2,235	0·43
	Total ..	..	7·194	..	..	..
	III.—Hard stone metal.					
(a)	Orissa Trunk Road	12·00	0·500	561	1,122	..
	IV.—Laterite.					
(a)	Orissa Trunk Road	8·00	11·156	12,506	1,121	..

(b) Includes—
(i) 16·00 miles of hard stone metal.
(ii) 5·00 miles of mooram or laterite, and
(iii) 49·37 miles of brick metal.

The first two of the classes listed above, viz., *Government* roads and *district* roads, form the main lines of communication in the district, and constitute the most important portion of the road system. A detailed list of the roads included under these two classes is given in Appendix V to this chapter, and the alignments followed by them are shown in the skeleton sketch map of the district (Plate X), each item being indicated by the same index number in both the map and the list so as to facilitate reference. In the case of the *district* roads these index numbers also correspond with the schedule numbers shown in the most recent approved schedule of roads issued under the authority of the District Board, in which will be found brief particulars showing crest width, metalled width, number and types of bridges, etc., of all district and subdivisional roads. This record being in existence and always available for reference, no attempt has been made to reproduce the information in the present report. The remaining three classes of roads, viz., *subdivisional*, *urban* and *village* roads, are of minor importance from the point of view of the present scheme and have therefore neither been listed nor shown on the map.

XI—Road investigations and traffic census.

An account of the investigations carried out with the object of studying the nature of the existing roads and bridges in the several districts of the province has already been given in Chapter V, which deals with this question for the province as a whole. As explained in the same chapter, details of the observations taken, although not included in the present report, have been placed on record in the office file. In this district the examination made and particulars recorded relate to 98 miles of road and 3,998 running feet of bridging, which includes 4 major bridges and 380 minor bridges and culverts. Particulars of the bridges on the existings railways in the district were also collected to help in the examination of the general drainage conditions and the study of the important question of obstruction to the

same caused by the construction of raised embankments. A classification according to length of opening has been made of the waterway of the bridges on the more important road and railway embankments existing in the district. This is shown in Appendix VI to this chapter.

A census of traffic was taken by actual count on some of the roads in the district selected as representative of the several classes into which the existing road system could be graded according to volume of traffic carried. Each traffic observation covered a period of seven consecutive days and nights. In most cases the observations were repeated at the same point at different times of the year, so as to indicate the extent to which the traffic varied. A complete record of the observations taken is given in Appendix VII to this chapter, and an examination of the results will be found in Chapter V, in which the general question of traffic statistics in the province as a whole is dealt with.

On account of the heavy cost involved the preparation of a record of traffic by actual count had to be restricted to only a few roads in the district. Steps were, however, taken to obtain a rough idea of the total traffic on each of the other important roads in the district, the method employed being to have these roads arranged approximately in relative order of traffic importance as compared with the roads on which actual observations had been taken. This was done by the District Engineer in consultation with his staff, these officers having a good knowledge of local conditions, and being in the best position to judge of the probable traffic intensities of the roads under their control. The results, including both the actual observations and the approximations mentioned above, are shown in graphical form in Appendix VIII to this chapter.

XII—Scheme for improved roads.

The general principles followed in selecting the alignments for the roads included in the improved road system in the several districts in the province have already been explained in Chapter VI, and need not be repeated here. In accordance with these principles, a complete scheme has been framed in the district for a road system which is considered sufficiently comprehensive to serve the needs of the district to a reasonable degree, in respect of both internal communication within the district itself, and of inter-district, provincial and inter-provincial communication.

The roads included in the complete district scheme are listed below, each item being assigned an index letter for use in referring to the item in other parts of the report:—

Index letter.	Location.		Approximate length in miles.	Classification.
	From—	To—		
A ..	Howrah ..	Bally ..	7	Provincial—Trunk.
B ..	Ditto ..	Baigachi ..	7	Ditto.
C ..	Baluhati ..	"Z" on item "K" below.	27	Ditto.
D ..	Howrah ..	Domjur ..	11	District—Main.
E ..	Bipra-Nawpara ..	Wadpur ..	4	Ditto.
F ..	Bauria ..	Debandi ..	14	Provincial—Trunk.
G ..	Amta ..	Sitapur ..	12	Inter-district—Main.
H ..	Ditto ..	Palaspai ..	8	Provincial—Trunk.
I ..	Bagnan ..	Kankrol ..	12	District—Main.
J ..	Uluberia ..	Raghudebpur ..	6	Ditto.
K ..	Ditto ..	Kulian ..	9	Ditto.
L ..	Bagnan ..	Shyampur ..	13	Ditto.
M ..	Sultanpur ..	Jhumjhumi ..	4	District—Secondary.
		Total ..	134	

A descriptive statement showing particulars of length, route, purpose served, cost, etc., of the items is given in Appendix IX to this chapter, and

the location of the roads is shown in the skeleton sketch map of the district (Plate X), the same index letters being used both in the statement and in the map in order to facilitate reference.

The figures given in the statement to show the approximate cost for the several items included in the scheme are based on rough estimates worked out after brief examination at site and collection of the necessary data. The type of investigations made, and the method employed for preparing the rough estimates, have been described in Chapter VIII, which deals with the question of the preparation of rough estimates for the whole province. As explained in the same chapter it must be clearly understood that the figures furnished in these estimates, although not based on haphazard guess work, cannot be taken as representing correctly the expenditure likely to be involved during actual construction, and cannot therefore be used for obtaining administrative approval.

A record of the observations made and the complete rough estimates for the items of the scheme are given in Appendix X to this chapter. It will be seen that two alternative rough estimates have been prepared for each item, the first in accordance with Specification "A," and the second in accordance with Specification "B". The details of these specifications, and the reasons which have led to the adoption of two alternative standard specifications, have been fully explained in Chapter VII, which deals with the general question of the adoption of standard specifications for the complete road scheme in the whole of the province.

The total length of improved roads proposed in the district is 134 miles, which includes 29 miles of existing metalled road, 35 miles of existing unmetalled road, and 70 miles of entirely new road, these figures being approximate, as the lengths are susceptible to change when the detailed alignments are actually set out. The total estimated cost of the district scheme (inclusive of bridging) stands at Rs. lakhs as per Specification "A" and Rs. lakhs as per Specification "B." The scheme provides 1 mile of road in respect of every 3·9 square miles of area, or in respect of every 8,200 heads of population in the district. On the assumption that a road, railway or steamer service is capable of tapping the country lying within 5 miles on either side of it, and neglecting obstructions which may be offered by unbridged rivers, the existing railways and steamer services and the proposed roads, when taken together, will serve 97·0 per cent. of the total area of the district, leaving untapped only 16 square miles of country, as indicated in the skeleton sketch map of the district (Plate X). The area directly served by the road system alone amounts to aproximately 506 square miles, representing 97·0 per cent. of the total area of the district.

The scheme provides for the connection by road of the district headquarters and the headquarters of the only outlying subdivision. Direct road connection has also been provided to 11 thana headquarters, while the headquarters of the 2 remaining thanas, although not directly connected, will be within 5 miles of an improved road, which will make it easy for a short connecting link to be added at a later stage.

XIII—Acceptance of district scheme for improved roads by district and other authorities.

A descriptive list of the roads included in the complete district scheme, together with a sketch map showing their positions, was sent to the authorities mentioned below for examination and expression of their opinion as to the suitability of the scheme from their respective points of view. The extent to which the scheme has been approved or objected to by the various authorities is given below:—

(1) District Board.—Approved scheme in full, conditionally on certain additional roads also being included. The case is still under reference.

(2) Collector.—Approves scheme in full and commends for consideration the request of the District Board for additional roads. The case is still under reference.

(3) Commissioner.—Approves scheme in full.

(4) East Indian Railway.—Approves scheme, but objects to the following item:—

(*i*) Item No. B—in respect of its entire length—Howrah to Baigachi.

(5) Bengal-Nagpur Railway.—Considers scheme unobjectionable.

(6) Howah-Amta and Howrah-Sheakhala Railways—Object strongly to item No. B—in respect of its entire length. Have expressed no opinion as to the other items.

The objections raised by these Railways and any alternative proposals suggested by them are dealt with separately in Chapter XXXVII.

In order to make the report self-contained in respect of the important question relating to acceptance of, or objection to, the scheme by the several authorities concerned, and to place on record such documents as may be required for reference in dealing with this question at a latter date, it has been considered desirable to attach copies of the correspondence on the subject with the various parties.

Copies of the correspondence with the Collector and the Chairman, District Board, which relate exclusively to this district, are given in Appendix XI to this chapter.

Copies of the correspondence with the Commissioner of the Burdwan Division, which relate to the six districts forming the Division, are given in Appendix IX to Chapter XXXVII.

Copies of the correspondence with the Railways, which relate to the entire area served by these lines, are given in Appendix IV to Chapter XXXVI.

In this district therefore unanimous acceptance by all parties concerned has been obtained in respect of all the items included in the scheme, except item No. B, the entire length of which is objected to.

XIV—Order of priority for construction.

The question of the order in which the roads selected to form the complete district scheme should be taken up for construction, has also been considered from the district point of view. The views of the Collector of the district and of the District Board on this subject were invited, and copies of the relevant correspondence are given in Appendix XI to this chapter. The order in which the district authorities place the items included in the scheme is shown below:—

Index letter.	Location.		Order of priority assigned by—	
	From—	To—	District Board.	Collector.
A ..	Howrah ..	Bally ..	I ..	The Collector agrees with the District Board.
B ..	Ditto ..	Baigachi ..	II ..	
C ..	Baluhati ..	"Z" on item "K" below.	III ..	
D ..	Howrah ..	Domjur ..	V ..	
E ..	Bipra-Nawpara ..	Wadpur ..	VII ..	
F ..	Bauria ..	Debandi ..	VIII ..	
G ..	Amta ..	Sitapur ..	IX ..	
H ..	Ditto ..	Palaspai ..	VI ..	
I ..	Bagnan ..	Kankrol ..	X ..	
J ..	Uluberia ..	Raghudebpur ..	XI ..	
K ..	Ditto ..	Kulian ..	XII ..	
L ..	Bagnan ..	Shyampur ..	IV ..	
M ..	Sultanpur ..	Jhumjhumi ..	XIII ..	

APPENDICES TO CHAPTER XIII.

Appendix I.

Howrah.

List of subdivisions and thanas, showing area, population and density as per 1931 census.

Subdivisions and thanas.	Area.	Population.	Density per sq. mile.
1	2	3	4
	Sq. miles.	Number.	
I—Sadar subdivision	*174*	*570,693*	*3,280*
1. Howrah (including thanas Golabari, Sibpur, Bantra and Malipanchghara).	10	224,873	22,487
2. Sibpur (outside Howrah City) ..	..	232	..
3. Domjur	37	80,605	2,179
4. Jagacha	8	18,121	1,286
5. Sankrail	29	81,640	2,815
6. Jagatballavpur	38	45,558	1,199
7. Panchla	34	63,523	1,868
8. Bally	18	56,141	3,118
II—Uluberia subdivision	*348*	*528,174*	*1,517*
1. Amta	128	188,088	1,469
2. Bagnan	59	92,811	1,573
3. Uluberia	73	116,004	1,589
4. Bowria	5	25,621	5,124
5. Shampur	83	105,650	1,272

Appendix II.

Howrah.

Statement showing hâts and melas arranged roughly in order of importance.

PART I—HÂTS.

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				No. of people.
1	Bowria ..	Bowria ..	Daily ..	2,500
2	Begri ..	Domjur ..	Bi-weekly ..	3,000

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				No. of people.
3	Jhaparda ..	Domjur ..	Daily ..	1,000
4	Sankrail ..	Sankrail ..	Ditto ..	500
5	Makardah ..	Domjur ..	Bi-weekly ..	1,200
6	Kamalpur ..	Shampur ..	Ditto ..	1,200
7	Jangalpara ..	Amta ..	Ditto ..	1,000
8	Harinarayanpur ..	Bagnan ..	Daily ..	400
9	Munshirhat ..	Jagatballavpur ..	Bi-weekly ..	1,000
10	Jhaparda ..	Domjur ..	Ditto ..	1,000
11	Dhulagori ..	Sankrail ..	Ditto ..	1,000
12	Bagnan ..	Bagnan ..	Daily ..	350
13	Fatepur ..	Amta ..	Bi-weekly ..	800
14	Kharuberia ..	Shampur ..	Ditto ..	800
15	Baksi ..	Bagnan ..	Ditto ..	800
16	Andul ..	Sankrail ..	Daily ..	300
17	Majabazar ..	Jagatballavpur ..	Ditto ..	300
18	Uluberia ..	Uluberia ..	Ditto ..	300
19	Khalore ..	Bagnan ..	Ditto ..	300
20	Santihat ..	Shampur ..	Bi-weekly ..	600
21	Rajganj ..	Sankrail ..	Ditto ..	550
22	Chaldakati ..	Amta ..	Ditto ..	500
23	Bargachi ..	Shampur ..	Ditto ..	500
24	Panchla ..	Panchla ..	Ditto ..	500
25	Govindapur ..	Ditto ..	Daily ..	200
26	Naskarpur ..	Ditto ..	Ditto ..	200
27	Naul ..	Shampur ..	Bi-weekly ..	400
28	Basantapur ..	Amta ..	Ditto ..	300
29	Baganda ..	Shampur ..	Ditto ..	300
30	Ajodha ..	Ditto ..	Ditto ..	300
31	Nuntia ..	Bagnan ..	Ditto ..	300
32	Deantala ..	Shampur ..	Ditto ..	250
33	Molla ..	Ditto ..	Ditto ..	250
34	Bantul ..	Bagnan ..	Daily ..	100
35	Gangarampur ..	Uluberia ..	Ditto ..	100
36	Chengail ..	Ditto ..	Ditto ..	100
37	Kalsaba ..	Ditto ..	Ditto ..	100
38	Nona ..	Ditto ..	Weekly ..	450
39	Ghoradaha ..	Amta ..	Bi-weekly ..	200
40	Kharind ..	Ditto ..	Ditto ..	200
41	Parua ..	Ditto ..	Ditto ..	200
42	Ramchandrapur ..	Ditto ..	Ditto ..	200
43	Jhumjhum ..	Shampur ..	Ditto ..	200
44	Lillooah Gosala Road	Panchla ..	Daily ..	75
45	Gourangachak ..	Amta ..	Bi-weekly ..	175
46	Paliara ..	Ditto ..	Ditto ..	150
47	Bhatora ..	Ditto ..	Ditto ..	150
48	Garchumuk ..	Shampur ..	Ditto ..	150
49	Shibpur ..	Ditto ..	Ditto ..	150
50	Guzarpur ..	Ditto ..	Ditto ..	150
51	Muralibar ..	Bagnan ..	Daily ..	60
52	Chandipur ..	Uluberia ..	Weekly ..	300
53	Jangalbilas ..	Ditto ..	Ditto ..	300
54	Banharishpur ..	Panchla ..	Ditto ..	300
55	National Jute Mill ..	Sankrail ..	Daily ..	50
56	Sidheswar ..	Panchla ..	Bi-weekly ..	100
57	Khanpur ..	Amta ..	Ditto ..	100
58	Simchak ..	Ditto ..	Ditto ..	100
59	Khalna ..	Ditto ..	Ditto ..	100
60	Tulsibaria ..	Ditto ..	Ditto ..	100
61	Dhulasimla ..	Uluberia ..	Fortnightly ..	300
62	Benaporar ..	Bagnan ..	Bi-weekly ..	60
63	Guzarpur ..	Amta ..	Weekly ..	100
64	Ramchandrapur ..	Ditto ..	Bi-weekly ..	50

PART II—MELAS.

Index No. on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				No. of days.	No. of people.
1	Jangalbilas ..	Uluberia ..	January-February ..	15	4,000
2	Kharuberia ..	Shampur ..	January-February ..	15	1,200
3	Kamalpur ..	Ditto ..	February-March ..	15	1,200
4	Shampur ..	Ditto ..	February-March ..	15	800
5	Baragachi ..	Ditto ..	January-February ..	12	600
6	Dihimondalghat	Ditto ..	January-February ..	8	800
7	Naul ..	Ditto ..	January-February ..	12	500
8	Kalidaha ..	Ditto ..	June-July ..	8	600
9	Ajodha ..	Ditto ..	February-March ..	8	600
10	Dirgakhola ..	Ditto ..	January-February ..	8	300
11	Natibpur ..	Uluberia ..	June-July ..	4	400
12	Khalore ..	Bagnan ..	August-September ..	1	600

Important hâts not included in Part I as sufficient information was not available to permit arrangement in order of importance.

PART III—HÂTS.

Index No. on map.	Name of hât.	Thana in which located.	When held.
1	2	3	4
I ..	Bally	Bally	Daily.
II ..	Jagadishpur ..	Ditto ..	....
III ..	Domjur	Domjur	....
IV ..	Sibpur Bazar ..	Howrah	Daily.

Appendix III.

Howrah.

List of ferries arranged in order of importance with details of income, location and other particulars.

Index No.	Name of ferry.	Average annual income during 1930-35.	Road on which located.	Controlling authority of road.	Index No. of road.	Mile in which ferry is located.	Stream crossed.	Period for which ferry plies.	Depth of water during cold weather.	Width of river at ferry point.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
		Rs.							Ft.	Ft.	
1	Khadinan ..	2,748	Bagnan-Fatepur ..	District Board ..	28	1	Damodar ..	Whole year	4	800	
2	Garchumak	1.336	Duke ..	Ditto ..	16	9	Ditto ..	Do. ..	6	700	
3	Bansberia ..	1,210	....	....	..	..	Ditto ..	Do. ..	6	1,000	
4	Boalia ..	913	Uluberia-Boaliaghat	District Board ..	41	8	Ditto ..	Do. ..	6	1,000	
5	Antilapara ..	845	....	Local Board ..	..	..	Rupnarayan ..	Do. ..	20	..	Established from July 1932.
6	Gopiganj ..	695	....	....	..	..	Ditto ..	Do. ..	20	..	
7	Shampur ..	679	....	....	..	..	Damodar ..	Do. ..	4	1,000	
8	Bakshi ..	465	....	Local Board ..	..	..	Gaighata khal ..	Do. ..	6	450	
9	Mankur ..	417	Bagnan-Mankur ..	District Board ..	29	6	Rupnarayan ..	Do. ..	20	..	
10	Mohishrekha	377	Orissa Trunk ..	Communications and Works Department.	2P	7	Damodar ..	Do. ..	5	1.000	
11	Dudkumra ..	247	....	Local Board ..	..	..	Rupnarayan ..	Do. ..	20	..	
12	Sijberia ..	245	....	....	..	..	Banspatty khal	Do. ..	5	500	
13	Pansuli ..	225	Pansuli Sitalchak ..	Local Board ..	..	..	Rupnarayan ..	Do. ..	20	..	

Appendix IV.

Howrah.

Statement showing particulars relating to railways within the district.

Serial No.	Name of railway.	Name of section.	Gauge.	Length within the district.	Number of stations.	Approximate statistics for the year ending March 1936.		
						Number of passengers coached.	Quantity of goods carried.	Gross receipts from all stations within the district.
1	2	3	4	5	6	7	8	9
			Ft. in.	Miles.	No.	No.	Tons.	Lakhs of rupees.
1	East Indian	Main Line	5 6	5·75	3	12,852,276	2,380,133	153·81
2	Ditto	Howrah-Burdwan Chord	5 6	2·00	..	..	..	..
3	Ditto	Extension to Shalimar	5 6	2·00	..	..	..	..
4	Bengal-Nagpur	Howrah-Kharagpur	5 6	34·00	18	10,128,333	2,609,475	10·74
5	Ditto	Santragachi-Shalimar	5 6	2·50	4			
6	Howrah-Amta	Howrah-Amta	2 0	27·25	17	..	..	..
7	Ditto	Howrah-Sheakhala	2 0	8·25	5	..	..	..
8	Ditto	Bargechia-Champadanga	2 0	3·00	3	..	..	..
		Total ..	..	84·75	50	22,980,609	4,989,608	164·55

Area of country for each mile of railway—16·23 square miles.

Appendix V.

List of roads in Howrah District, including Government roads and district roads showing total length of each item and allocation of same under the classification given below :—

Class I—Metalled roads—
- A—Bridged and drained throughout.
- B—Partially bridged and drained.

Class II—Unmetalled roads—
- A—Bridged and drained throughout.
- B—Partially bridged and drained.

Class III—Roads of types inferior to I and II above.

Note.—Subdivisional roads, urban roads and village roads are not included in this list.

Index No.	Name of road.	From	To	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A	B	A	B		
1	2	3	4	5	6	7	8	9	10	11
	Government roads—									
1P	Grand Trunk	....	....	8·54	8·54	..	..	..	..	..
2P	Orissa Trunk	....	....	15·16	15·16	..	..	..	..	..
3P	Foreshore	....	....	1·04	1·04	..	..	..	..	..
	Total ..	....	....	24·74	24·74	..	..	..	..	..

	District Board roads—									
1	**Howrah-Jagatballavpur** ..	Howrah ..	Jagatballavpur	15·84	12·25	..	3·59	..	..	..
2	**Old Benares** ..	Ditto ..	Boundary of the district near Jagadishpur.	5·45	5·45	..	..	..	..	..
3	**Jagatballavpur-Amta** ..	Jagatballavpur ..	Amta ..	10·07	..	..	..	10·07	..	
4	**Narendrapur-Amta** ..	Narendrapur ..	Ditto ..	9·74	1·00	..	8·74	..	..	
5	**Domjur-Bouria** ..	Domjur. ..	Bouria ..	13·99	5·00	..	8·99	..	..	
6	**Domjur-Jagadishpur** ..	Ditto ..	Jagadishpur ..	4·65	4·65	..	..	..	..	
7	**Domjur-Mohiary** ..	Ditto ..	Mohiary ..	3·37	3 37	..	..	..	..	
8	**Makardah-Andul** ..	Makardah ..	Andul ..	3·25	3·25	..	..	..	..	
10	Santragachi-Mohiary ..	Santragachi ..	Mohiary ..	5·16	1·00	..	4·16	..	..	
13	Mohiary-Kundu ..	Mohiary ..	Kundu ..	4·56	4·56	..	..	..	..	
14	Andul-Ekkabarpur ..	Andul ..	Ekkabarpur ..	8·03	2·00	..	..	6·03	..	
15	Domjur-Kuldanga ..	Domjur ..	Kuldanga ..	7·00	..	2·00	..	5·00	..	
16	Ullberia-Kharuberia ..	Uluberia ..	Kharuberia ..	14·09	..	..	..	14·09	..	
17	Bagnan-Kalore ..	Bagaan ..	Khalore ..	1·31	0·31	..	..	..	1·00	
18	Uluberia-Cuttack ..	....	....	0·21	0·21	..	..	..	..	
19	Mohiary-Rajganj ..	Mohiary ..	Rajganj ..	3·17	3·17	..	..	..	..	
20	Thana Makua-Goboria ..	Thana Makna	Goboria ..	1·27	..	..	1·27	..	..	
21	Bankra-Bowkhali ..	Bankra ..	Mowkhali ..	1·61	..	..	1·61	..	..	
			Carried over	112·77	46·22	2·00	28·36	35·19	1·00	

Index No.	Name of road.	From—	To—	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A	B	A	B		
1	2	3	4	5	6	7	8	9	10	11
			Brought forward	112·77	46·22	2·00	28·36	35·19	1·00	
22	Makarda-Begri ..	Makarda ..	Begri ..	2·25	..	2·25	..	..	..	
23	Rajapur-Khasmorah ..	Rajapur ..	Khasmorah ..	3·04	..	..	..	3·04	..	
24	Borgachi Sekrahatty ..	Borgachhi ..	Sekrahatty ..	3·00	..	..	..	3·00	..	
25	Munshirhat-Basantapur ..	Munshirhat ..	Basantapur ..	4·74	2·19	..	2·55	..	..	
26	Amta-Jhinkra ..	Amta ..	Jhinkra ..	7·78	..	..	..	7·78	..	
27	Bagnan-Mugkallyan ..	Bagnan ..	Mugkhalyan ..	4·50	4·50	..	..	..	..	
28	Bagnan-Fatehpur ..	Ditto ..	Fatehpur ..	5·30	..	..	5·30	..	..	
29	Bagnan-Mankur ..	Ditto ..	Mankur ..	5·40	5·40	..	..	..	..	
30	Kantapukur-Mellock ..	Kantapukur ..	Mellock ..	3·50	..	..	..	3·50	..	
31	Makordah-Ekshora ..	Makardah ..	Ekshora ..	5·00	..	..	..	5·00	..	
32	Abada-Ranihaty ..	Abada ..	Ranihatty ..	3·27	..	..	..	3·27	..	
33	Majoo-Jogrampur ..	Majoo ..	Jogrampur ..	1·30	..	..	..	1·30	..	
34	Lillooah to Old Benares ..	Lillooah ..	Old Benares ..	1·26	1·26	..	..	..	..	
37	Makardah-Daffarpur ..	Makardah ..	Daffarpur ..	1·50	..	1·50	..	..	..	
42	Borgachi-Ranmohal ..	Borgachi ..	Ranmohal ..	3·50	..	..	3·50	..	..	

43	**Fuleswar-Faterkhia** ..	Fuleswar ..	Faterkhia ..	2·88	..	..	2·88	..	..
44	**Sankrail Station to Dhulagore** ..	Sankrail Station	Dhulagore ..	1·91	1·91	..	..	..	..
45	**Udaynarayanpur-Jangalpara** ..	Udaynarayanpur	Jangalpara ..	0·66	..	..	0·66	..	..
46	**Munshirhat-Ghoradaha** ..	Munshirhat ..	Ghoradaha ..	3·00	..	..	3·00	..	..
47	**Fuleswar Station-Rajapur Khal** ..	Fuleswar Station	Rajapur drainage khal.	0·51	..	..	0·51	..	..
48	**Mukundadighi-Darmaghata** ..	Munkundadighi ..	Darmahatta ..	2·00	..	..	..	2·00	..
49	Santragachi-Kona ..	Santragachi ..	Kona ..	2·50	..	..	..	2·50	..
50	Sankrail Station to Village ..	....	....	1·94	1·94	..	..	..	..
51	Uluberia-Katley	Uluberia ..	Katley ..	2·00	..	..	..	2·00	..
52	Dhulagore-Deulpore ..	Dhulagore ..	Deulpore ..	3·00	..	..	..	3·00	..
53	Nuniahat-Kamalpur ..	Nuniahat ..	Kamalpur ..	14·00	..	..	..	14·00	..
54	Borda-Pratapchak ..	Borda ..	Protapchak ..	10·00	..	..	..	10·00	..
55	Bouria-Basudebpur ..	Bouria ..	Basudebpur ..	5·00	..	..	..	5·00	..
56	Vascoor-Narna	Vascoor ..	Narna ..	4·50	1·00	..	..	3·50	..
57	Bargachi-Gajankole	Bargachi ..	Gajankole ..	4·00	..	..	..	4·00	..
58	Bargachi-Jalalsi Bowbazar ..	Ditto ..	Jalalsi Bowbazar	5·00	..	..	..	5·00	..
59	Shyampore-Shibganj ..	Shyampore ..	Shibpore ..	4·00	..	..	..	4·00	..
60	Shyampore-Benia ..	Ditto ..	Benia ..	5·00	..	..	..	5·00	..
61	Mohendra-Roy ..	Tajpur Ferry ..	Jaypur Embankment.	5·50	..	..	..	5·50	..
			Carried over ..	245·51	64·42	5·75	46·76	127·58	1·00

Index No.	Name of road.	From—	To—	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A	B	A	B		
1	2	3	4	5	6	7	8	9	10	11
			Brought forward	245·51	64·42	5·75	46·76	127·58	1·00	
62	Jagatballavpur-Khanderghat ..	Jagatballavpore ..	Khanderghat ..	4·50	..	..	..	4·50	..	
63	Sasaty-Khamberia ..	Sasaty ..	Khamberia ..	5·00	..	..	..	5·00	..	
64	Chatra-Harishpur ..	Chatra ..	Harishpur ..	1·25	..	..	..	1·25	..	
65	Ramkamal ..	..	..	0·50	0·50	..	..	..	..	
66	Lilloah-Chakpara ..	Lillooah ..	Chakpara Road	2·75	0·37	..	2·38	..	..	
67	Shyampur-Shibpur ..	Shyampore ..	Shibpore ..	6·00	..	..	..	6·00	..	
68	Lillooah-Gousala ..	..	..	2·00	0·31	..	1·69	..	..	
69	Gangarampur-Rajapur ..	Gangarampur	Rajapur ..	2·25	..	..	..	2·25	..	
70	Panchla-Majuty ..	Panchla ..	Majuty ..	2·50	..	..	..	2·50	..	
71	Bankra-Mohiary ..	Bankra ..	Mohiary ..	3·25	1·00	..	2·25	..	..	
72	Orfully-Mellock ..	Orfully ..	Mellock ..	3·00	..	..	3·00	..	..	
73	Sijberia-Panchla ..	Sijberia ..	Panchla ..	6·00	..	..	..	6·00	..	
74	Chengail-Dasbhaga ..	Chengail ..	Dasbhaga ..	1·50	..	..	..	1·50	..	
75	Bargachia-Kamalpur ..	Bargachia ..	Kamalpur ..	0·50	..	..	..	0·50	..	

76	Ramnagore-Khalsini ..	Ramnagore ..	Khalsini ..	2·00	..	..	..	2·00	..
77	Basudebpur ..	.. ..	..	4·00	..	..	..	4·00	
78	Batai-Gazipur ..	Batai ..	Gazipur ..	3·00	..	..	..	3·00	..
79	Chandipur-Paikhala ..	Chandipur ..	Paikhala ..	2·00	..	..	..	2·00	..
9	Jagatballavpur-Masat ..	Jagatballavpur ..	Masat ..	1·00	..	..	..	..	1·00
11	Amta-Khalna ..	Amta ..	Khalna ..	7·54	..	..	..	..	7·54
12	Jagatballavpur-Sitapur ..	Jagatballavpur ..	Sitapur ..	0·66	..	..	..	..	0·66
39	Fuleswar-Uluberia ..	Fuleswar ..	Uluberia ..	1·00	..	..	..	..	1·00
41	Uluberia-Boaliaghat ..	Uluberia ..	Boaliaghat Road	7·37	..	..	..	..	7·37
			Total ..	315·08	66·60	5·75	56·08	168·08	18·57

Appendix

How

Statement making an analysis of waterway on

Serial No.	Index No.	Name of roads and section of railways.	Miles.	A Existing bridges. 1 Up to 5'. No.	R.ft.	2 Above 5' up to 10'. No.	R.ft.	3 Total A_1+A_2. No.	R.ft.	4 Average per mile. No.	R.ft.
		Railways—									
1	..	Howrah-Kharagpur ..	34·0	4	15	8	48	12	63	0·4	1·8
3	..	Howrah-Delhi ..	5·8	5	18	8	65	13	83	2·2	14·3
3	..	Howrah-Burdwan Chord ..	2·0	5	12	..	..	5	12	2·5	6·0
		Total ..	41·8	14	45	16	113	30	158	0·7	3·8
		Government roads—									
4	1P	Orissa Trunk	15·2	1	5	2	12	3	17	0·2	1·1
5	2P	Grand Trunk	8·5	19	44	2	12	21	56	2·5	6·6
6	3P	Foreshore	1·0	4	16	1	8	5	24	5·0	24·0
		Total ..	24·7	24	65	5	32	29	97	1·2	3·9
		District roads—									
7	1	Howrah-Jagatballavpur ..	15·8	28	96	4	28	32	124	2·0	7·8
8	2	Old Benares	5·4	12	35	..	..	12	35	2·2	6·4
9	3	Jagatballavpur-Amta	10·1	10	37	4	25	14	62	1·4	6·2
10	4	Narendrapur-Amta	9·7	7	27	5	22	12	49	1·6	5·0
11	5	Domjur-Bouria	14·0	9	27	1	10	10	37	0·7	2·6
12	6	Domjur-Jagadishpur	4·6	17	43	4	30	*21	73	4·5	15·7
13	7	Domjur-Mohiary	3·4	15	30	1	10	16	40	4·7	11·7
14	8	Makardah-Andul	3·2	17	42	..	..	17	42	5·2	12·8
15	10	Santragachi-Mohiary	5·2	23	26	4	24	27	50	5·2	9·7
16	13	Mohiary-Kundu	4·6	..	..	..	..	..	..	..	..
17	14	Andul-Ekkabbarpur	8·0	10	24	4	28	14	52	1·7	6·4
18	15	Domjur-Kuldanga	7·0	12	13	2	17	14	30	2·0	4·3
19	16	Uluberia-Kharuberia	14·0	4	4	2	20	6	24	0·4	1·7
20	17	Bagnan-Khalore	1·3	1	1	1	10	2	11	1·5	8·5
21	18	Uluberia-station to Cuttack ..	0·2	..	..	..	..	..	..	..	..
22	19	Mohiary-Rajganj	3·2	7	7	1	10	8	17	2·5	5·3
23	22	Makardah-Begri	2·2	12	20	1	6	13	26	5·8	11·5
24	23	Rajapur-Khashmorah ..	3·0	4	8	1	10	5	18	1·6	5·9
25	25	Munshirhat-Basantapur ..	4·7	3	3	3	18	6	21	1·0	4·4
26	26	Amta-Jhinkra	7·8	1	2	..	..	1	2	0·1	0·3
27	27	Bagnan-Mugkalyan	4·5	5	16	1	9	6	25	1·3	5·6
28	29	Bagnan-Mankur	5·4	4	7	3	22	7	29	1·3	5·3
29	31	Makordah Ekshora	5·0	10	14	1	8	11	22	2·2	4·4
30	34	Lillooah -Old Benares	1·3	6	14	..	..	6	14	4·6	11·1
31	37	Makardah-Daffarpur	1·5	5	5	..	..	5	5	3·3	3·3
32	44	Sankrail-Station to Dhulagore ..	1·9	6	15	..	..	6	15	3·2	7·9
33	50	Sankrail Station to Village ..	1·9	2	3	1	6	3	9	1·5	4·6
34	53	Numtlahat Kamalpur ..	14·0	8	14	..	..	8	14	0·6	0·9
35	65	Ramkamal	0 5	..	..	..	..	..	..	..	..
		Total ..	163·4	238	533	44	313	282	846	1·7	5·1
		Grand Total ..	229·9	276	643	65	458	341	1,101	1·5	4·8

VI.

rah.

railways and roads according to length of opening.

B Existing Bridges.												A+B Existing Bridges.				C Existing Bridges.			Total A_2+B_2+C.
1		2		3		4		5		6		Total A_2+B_2.		Average per mile. A_2+B_2.		Above 100′ Up to 300′.		Above 300′.	
Above 10′ up to 25′.		Above 25′ up to 50′.		Above 50′ up to 75′.		Above 75′ up to 100′.		Total B(1+2+3+4.)		Average per mile.									
No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	No.	R.ft.	R.ft.	R. ft.
27	404	3	120	..	..	2	160	32	684	0·9	20·0	44	747	1·3	21·8	3	720	3,200	4,667
1	12	..	..	..	..	..	..	1	12	0·2	2·1	14	95	2·4	16·4	1	160	..	255
2	32	..	..	..	..	..	..	2	32	1·0	16·0	7	44	3·5	22·0	..	..	..	44
30	448	3	120	..	..	2	160	35	728	0·8	17·4	65	886	1·5	21·2	4	880	3,200	4,966
7	96	..	..	..	..	..	..	7	96	0·5	6·3	10	113	0·7	7·4	..	..	..	113
..	..	..	..	..	..	..	..	..	..	..	..	21	56	2·5	6·6	1	220	..	276
..	..	..	..	1	78	..	..	1	78	1·0	78·0	6	102	6·3	102·0	..	..	..	102
7	96	..	..	1	78	..	..	8	174	0·3	7·1	37	271	1·5	11·0	1	220	..	491
6	84	..	..	..	..	..	..	6	84	0·4	5·3	38	208	2·4	13·1	..	..	..	208
..	..	..	..	..	..	..	..	..	..	..	..	12	35	2·2	6·4	..	..	..	35
1	13	2	121	..	..	..	..	3	134	0·3	13·4	17	196	1·7	19·6	..	..	..	196
1	15	2	79	1	60	..	..	4	154	0·4	15·8	16	203	2·0	20·8	1	200	..	403
..	..	1	38	..	..	..	..	1	38	0·1	2·7	11	75	0·8	5·3	..	..	..	75
..	..	..	..	..	..	..	..	..	..	..	..	21	73	4·5	15·7	..	..	..	73
..	..	..	..	..	..	..	..	..	..	..	..	16	40	4·7	11·7	..	..	..	40
..	..	1	44	..	..	..	..	1	44	0·3	13·5	18	86	5·5	26·3	..	..	..	86
..	..	..	..	..	..	..	..	..	..	..	..	27	50	5·2	9·7	..	..	..	50
..	..	1	30	..	..	..	..	1	30	0·2	6·6	1	30	0·2	6·6	..	..	..	30
..	..	1	44	..	..	..	..	1	44	0·1	5·5	15	96	1·9	11·9	..	..	..	96
..	..	..	..	..	..	..	..	..	..	..	..	11	30	2·0	4·3	..	..	..	30
12	220	6	236	2	132	..	..	20	588	1·4	41·9	26	612	1·8	43·6	..	..	..	612
..	..	..	..	..	..	..	..	..	..	..	..	2	11	1·5	8·5	..	..	..	11
1	14	..	..	..	..	..	..	1	14	5·0	70·0	1	14	5·0	70·0	..	..	..	14
..	..	..	..	..	..	..	..	..	..	..	..	8	17	2·5	5·3	..	..	..	17
..	..	1	40	..	..	..	..	1	40	0·4	17·8	14	66	6·2	29·3	..	..	..	66
..	..	..	..	1	65	..	..	1	65	0·3	21·6	6	83	1·9	27·5	..	..	..	83
2	41	3	103	..	..	..	..	5	144	1·1	32·1	11	165	2·3	36·5	..	..	..	165
5	86	5	190	1	70	..	..	11	346	1·4	45·5	12	348	1·5	45·8	..	..	..	348
1	12	..	..	..	..	..	..	1	12	0·2	2·7	7	37	1·5	8·4	1	196	..	233
1	20	..	..	..	..	..	..	1	20	0·2	3·7	8	49	1·5	9·0	..	..	..	49
..	..	..	..	..	..	..	..	..	..	..	..	11	22	2·2	4·4	..	..	..	22
..	..	..	..	..	..	..	..	..	..	..	..	6	14	4·3	11·1	..	..	..	14
..	..	1	30	..	..	..	..	1	30	0·7	20·0	6	35	4·0	23·3	..	..	..	35
..	..	1	45	..	..	..	..	1	45	0·5	2·4	7	60	3·7	10·3	..	..	..	60
..	..	..	..	..	..	..	..	..	..	..	..	3	9	1·5	4·6	..	..	..	9
4	59	5	168	..	..	1	81	10	308	0·7	22·0	18	382	1·3	22·9	1	110	..	432
1	15	..	..	..	..	..	..	1	15	2·0	30·0	1	15	2·0	30·0	..	..	..	15
35	579	30	1,168	5	327	1	81	71	2,155	0·4	13·2	353	3,001	2·1	18·5	3	506	..	3,507
72	1,123	33	1,288	6	405	3	241	114	3,057	0·5	13·3	455	4,158	2·0	18·1	8	1,606	3,200	8,964

Appendix VII.

Traffic Census in Howrah District.

(1) Location of observation—Mile 1·37 (west of Howrah Maidan).
(2) Index No. and name of road—No. 1P. Grand Trunk Road.
(3) Supervising officer—Maulvi Ahmed Hossain, Subdivisional Officer, Howrah.
(4) Nature of road surface—Tarmacadam.
(5) Full width and metalled width of road—32′ 0″ and 16′ 0″.
(6) Average weight in tons of all traffic in 24 hours—9,290·56 tons.

Day—6 a.m. to 6 p.m. Night—6 p.m. to 6 a.m.

Date.	Motor Traffic.										Non-motor Traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
19th November ..	759	98	635	125	1,175	487	790	373	16	9	201	79	570	201	514	191	3,035	1,350	22,012	15,630	1,753	99
20th November ..	635	100	603	133	1,079	408	726	453	12	7	202	162	457	188	452	178	2,560	1,237	27,000	16,200	1,539	152
21st November ..	646	83	518	107	1,153	462	715	596	16	4	182	248	696	262	702	276	3,896	1,793	28,400	12,908	1,534	223
22nd November ..	196	16	209	42	886	477	607	326	23	3	263	134	476	173	481	151	2.864	1,001	24,470	14,200	291	201
23rd November ..	555	58	468	97	904	427	802	330	19	5	213	77	397	221	342	185	2,605	1,090	20,200	10,500	1,253	358
24th November ..	630	81	552	117	1,205	550	741	386	12	1	151	107	358	256	336	209	3,735	1,144	20,600	9,400	1,239	98
25th November ..	736	153	725	192	1,323	536	716	368	17	15	201	192	346	176	277	237	3,565	1,346	25,600	11,792	1,468	309
Total ..	4,157	589	3,710	813	7,725	3,347	5,096	2,832	115	44	1.443	999	3,300	1,477	3,104	1,427	22,260	8,961	168,282	90,630	9,077	1,440
Total—Day and night ..	4,746		4,523		11,072		7,928		159		2,442		4,777		4,531		31,221		258,912		10·517	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	16,611·00 tons		4,523·00 tons		27,680·00 tons		5.946·00 tons		31·80 tons		732·60 tons		5,254·70 tons		1,132·75 tons		3,122·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	54,791·80
Average weight per day of 24 hours	7,827·40
Weight per foot width of metalled track	489·20

Non-motor traffic:

	Tons.
Total weight in seven days	10,242·15
Average weight per day of 24 hours	1,463·16
Weight per foot width of metalled track	91·45

Total weight of all traffic in seven days—65,033·95 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 1. Howrah-Jagatballavpur Road.

(3) Supervising officer—J. N. Thakur, Overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—740·17 tons.

Date.	Motor Traffic.										Non-motor Traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
21st November	52	18	36	9	78	45	62	2	..	..	62	10	54	60	60	45	202	110	1,378	354	70	3
22nd November	20	8	15	9	75	37	34	16	..	..	8	12	50	75	35	33	310	80	1,190	668	55	1
23rd November	20	38	20	25	80	35	75	39	..	..	30	13	40	73	45	60	260	164	1,070	385	40	7
24th November	19	27	11	16	121	64	30	22	..	..	8	8	75	106	35	41	343	96	1,036	556	78	7
25th November	30	16	14	8	60	42	14	14	..	..	10	10	80	125	31	14	228	48	971	337	35	12
26th November	22	6	14	7	75	30	15	6	..	..	14	9	65	61	25	21	340	101	1,695	363	40	18
27th November	13	10	10	9	72	43	14	10	..	..	14	10	40	68	17	30	380	27	1,530	262	25	12
Total ..	176	123	120	83	561	296	244	109	..	..	146	72	404	568	248	244	2,063	606	8,870	2,925	343	60
Total—Day and night ..	299		203		857		353		..		218		972		492		2,669		11,795		403	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 ton		At ·25 ton		At ·1 ton					
	1,046·50 tons		203·00 tons		2,142·50 tons		264·75 tons		..		65·40 tons		1,069·20 tons		123·00 tons		266·90 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	3,656·75
Average weight per day of 24 hours	.. .. ..	522·39
Weight per foot width of metalled track	.. .. ..	65·30

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,524·50
Average weight per day of 24 hours	.. ..	217·78
Weight per foot width of metalled track	.. ..	27·22

Total weight of all traffic in seven days—5,181·25 tons

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 1. Howrah-Jagatballavpur Road.

(3) Supervising officer—Babu J. N. Thakur, Overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—18′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—880·24 tons.

Date.	Motor Traffic.										Non-motor Traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	40	17	20	10	85	71	50	28	2	..	40	25	50	65	37	31	350	90	1,390	303	65	..
25th January	45	8	16	2	118	41	31	10	3	..	23	3	93	52	46	18	448	151	1,309	437	45	..
26th January	11	11	6	5	113	95	13	5	..	..	14	5	44	80	34	20	376	78	2,295	340	66	7
27th January	40	12	17	4	105	38	25	13	..	..	10	9	70	94	29	33	450	131	1,780	338	40	20
28th January	16	10	7	1	71	60	29	26	..	..	10	17	43	70	41	15	357	225	2,076	631	56	6
29th January	20	10	15	3	135	63	20	16	..	..	10	11	52	75	28	17	480	210	2,150	243	35	15
30th January	50	23	37	17	125	95	85	38	..	..	26	17	40	90	31	43	480	118	1,488	518	45	19
Total ..	222	91	118	42	752	463	253	136	5	..	133	87	392	526	246	177	2,941	1,003	12,488	2,810	352	67
Total—Day and night ..	313		160		1,215		389		5		220		918		423		3,944		15,298		419	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	1,095·50 tons		160·00 tons		3,037·50 tons		291·75 tons		1·00 tons		66·00 tons		1,009·80 tons		105·75 tons		394·40 tons					

Motor Traffic:

		Tons.
Total weight in seven days	.. ..	4,585·75
Average weight per day of 24 hours	.. ..	655·11
Weight per foot width of metalled track	.. .. ..	81·89

Non-motor Traffic:

		Tons.
Total weight in seven days	.. .. ..	1,575·95
Average weight per day of 24 hours	.. .. ..	225·13
Weight per foot width of metalled track	.. ..	28·14

Total weight of all traffic in seven days—6,161·70 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 2. Old Benares Road.

(3) Supervising officer—J. N. Thakur, Overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—498·73 tons.

Date.	Motor Traffic.										Non-motor Traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
21st November	20	10	20	16	40	28	20	3	..	..	10	..	70	38	50	22	375	135	770	240	20	72
22nd November	19	15	15	12	35	20	16	12	..	..	5	..	75	70	50	41	330	105	780	193	15	7
23rd November	17	10	7	5	25	23	20	8	..	..	6	5	51	40	31	25	380	95	815	303	5	30
24th November	15	10	11	2	32	30	16	..	..	..	3	3	36	65	30	11	256	143	725	325	335	..
25th November	20	15	15	10	35	33	5	1	..	..	6	4	53	45	32	35	345	110	750	235	3	20
26th November	32	11	15	10	38	35	19	10	..	..	5	2	57	41	33	20	395	134	774	130	19	5
27th November	25	20	11	6	38	33	11	7	..	..	5	2	60	40	43	25	396	123	767	223	5	3
Total ..	148	91	94	61	243	202	107	41	..	..	40	16	402	339	269	179	2,477	845	5,351	1,649	402	137
Total—Day and night ..	239		155		445		148		..		56		741		448		3,322		7,030		539	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	836·50 tons		155·00 tons		1,112·50 tons		111·00 tons		..		16·80 tons		815·10 tons		112·00 tons		332·20 tons					

Motor Traffic:

		Tons.
Total weight in seven days	.. ..	2,215·00
Average weight per day of 24 hours	.. ..	316·43
Weight per foot width of metalled track	.. .. ..	39·55

Non-motor Traffic:

		Tons.
Total weight in seven days	.. .. ..	1,276·10
Average weight per day of 24 hours	.. ..	182·30
Weight per foot width of metalled track	.. ..	22·80

Total weight of all traffic in seven days—3,491·10 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 2. Old Benares Road.

(3) Supervising officer—

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—16″ 0′ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—722·93 tons.

Date.	Motor Traffic.										Non-motor Traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	38	32	25	21	40	36	35	22	..	..	20	14	72	63	60	51	308	268	805	344	25	32
25th January	45	34	30	20	42	33	25	14	..	..	12	9	92	58	52	37	375	225	918	360	64	22
26th January	42	29	28	17	45	27	16	7	..	..	10	4	86	75	42	44	368	348	877	595	420	7
27th January	38	15	24	12	40	26	11	6	..	..	8	4	135	47	60	49	463	282	892	404	42	7
28th January	42	16	28	10	40	30	21	11	..	..	8	6	93	44	53	22	472	280	968	397	78	12
29th January	38	19	22	12	42	35	14	9	..	..	8	..	72	49	44	36	454	290	980	455	110	32
30th January	29	26	16	18	45	32	12	12	..	..	7	6	60	52	49	39	442	337	928	440	56	37
Total ..	272	171	173	110	294	219	134	81	..	..	73	43	610	388	360	278	2,882	2,030	6,368	2,995	795	149
Total—Day and night ..	443		283		513		215		..		116		998		638		4,912		9,363		944	
	At 3·5 tons 1,550·50 tons		At 1 ton 283·00 tons		At 2·5 tons 1,282·50 tons		At ·75 ton 161·25 tons		At ·20 ton ..		At ·3 ton 34·80 tons		At 1·1 tons 1,097·80 tons		At ·25 ton 159·50 tons		At ·1 ton 491·20 tons					

Motor traffic:

	Tons.
Total weight in seven days	3,277·25
Average weight per day of 24 hours	468·18
Weight per foot width of metalled track	58·52

Non-motor traffic:

	Tons.
Total weight in seven days	1,783·30
Average weight per day of 24 hours	254·75
Weight per foot width of metalled track	31·84

Total weight of all traffic in seven days—5,060·55 tons.

(1) Location of observation—3rd mile.

(2) Index No. and name of road – No. 3. Jagatballavpur-Amta Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—14′ 0″.

(6) Average weight in tons of all traffic in 24 hours—40·45 tons.

Date.	Motor Traffic.										Non-motor Traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
22nd November	..	..	..	..	..	..	..	..	..	..	..	..	24	15	18	14	55	..	932	208	28	1
23rd November	..	..	..	..	..	..	2	..	..	..	..	..	5	..	7	10	62	13	456	393	65	3
24th November	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	47	17	542	164	7	3
25th November	..	..	..	..	..	..	2	..	..	.	..	..	..	35	3	11	81	6	781	197	30	2
26th November	..	..	.	..	..	..	2	..	..	.	..	..	31	..	26	13	131	9	1,518	153	28	1
27th November	..	..	..	..	..	..	1	.	..	..	..	.	14	3	2	5	95	6	1,080	209	38	..
28th November	..	..	..	..	..	..	3	2	..	..	..	.	16	15	8	22	121	18	1,301	306	39	..
Total ..	..	..	..	..	..	..	10	2	..	..	..	..	89	68	66	75	592	69	6,610	1,630	235	10
Total—Day and night ..	..		..		..		12		..		..		157		141		661		8,240		245	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		9·00 tons		..		..		172·70 tons		35·25 tons		66·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	9·00
Average weight per day of 24 hours	1·30
Weight per foot width of road	0·09

Non-motor traffic:

	Tons.
Total weight in seven days	274·05
Average weight per day of 24 hours	39·15
Weight per foot width of road	2·79

Total weight of all traffic in seven days—283·05 tons.

(1) Location of observation—3rd mile.

(2) Index No. and name of road—No. 3. Jagatballavpur-Amta Road.

(3) Supervising Officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—14′ 0″.

(6) Average weight in tons of all traffic in 24 hours—144·96 tons.

Date.	Motor traffic.										Non-motor traffic											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	..	..	..	..	..	..	28	10	2	..	..	..	25	9	17	22	41	9	525	105	27	10
25th January	..	..	..	..	..	..	39	18	..	..	..	..	58	15	69	51	50	6	620	209	76	11
26th January	..	..	..	..	..	..	72	29	2	2	..	..	54	23	84	37	53	25	723	193	72	35
27th January	..	..	..	..	..	..	41	11	..	..	..	..	35	47	66	26	68	16	721	209	86	35
28th January	..	..	..	..	..	..	47	18	2	..	..	..	37	21	46	25	72	..	770	243	34	18
29th January	..	..	..	.	..	..	40	20	..	..	..	..	33	14	35	39	74	18	638	333	25	16
30th January	..	..	..	..	..	..	52	27	..	.	..	..	25	45	28	11	68	..	574	450	36	54
Total ..	..	..	..	..	..	..	319	133	6	2	..	..	267	174	345	211	426	74	4,571	1,742	356	179
Total—Day and night ..	..		..		..		452		8		..		441		556		500		6,313		535	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		339·00 tons		1·60 tons		..		485·10 tons		139·00 tons		50·00 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	340·60
Average weight per day of 24 hours	.. .. ..	48·66
Weight per foot width of road	.. .. ..	3·48

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	674·10
Average weight per day of 24 hours	.. ..	96·30
Weight per foot width of road	.. ..	6·88

Total weight of all traffic in seven days—1,014·70 tons.

(1) Location of observation—3rd mile.

(2) Index No. and name of road—No. 4. Narendrapur-Amta Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled (only a small portion metalled).

(5) Full width of road—14′ 0″.

(6) Average weight in tons of all traffic in 24 hours—190·52 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
22nd November ..	..	..	..	..	..	..	2	..	..	..	..	..	65	69	90	49	132	86	1,909	695	110	..
23rd November ..	..	..	..	..	..	..	..	..	..	..	..	..	18	55	32	34	110	85	1,703	538	129	..
24th November ..	..	..	..	..	..	..	..	..	..	..	..	..	47	61	51	49	133	69	2,360	333	115	..
25th November ..	..	..	..	..	..	..	..	..	..	..	..	..	61	74	68	65	149	77	2,131	479	133	..
26th November ..	..	..	..	..	..	..	..	..	..	..	..	..	56	33	49	32	125	76	1,687	832	92	..
27th November ..	..	..	..	..	..	..	5	14	..	..	..	..	94	83	99	65	173	90	2,579	1,684	221	..
28th November ..	..	..	..	..	..	..	10	..	..	..	..	..	93	60	69	52	154	76	2,427	1,294	144	..
Total ..	..	..	..	..	..	..	17	14	..	..	..	..	434	435	458	346	976	559	14,796	5,855	944	..
Total—Day and night ..	..		..		..		31		..		..		869		804		1,535		20,651		944	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At 3 ton		At 1 1 tons		At ·25 ton		At ·1 ton					
			..		..		23 25 tons		..				955·90 tons		201 00 tons		153·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	23·25
Average weight per day of 24 hours	.. .. ..	3·32
Weight per foot width of road	.. .. ..	0·24

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,310·40
Average weight per day of 24 hours	.. ..	187·20
Weight per foot width of road	.. ..	13·37

Total weight of all traffic in seven days—1,333·65 tons.

(1) Location of observation—3rd mile.

(2) Index No. and name of road—No. 4. Narendrapur-Amta Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—14′ 0.″

(6) Average weight in tons of all traffic in 24 hours—452·53 tons.

Date.	Motor traffic.										Non-motor traffic.										Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc		Bullock carts.				Other types of vehicles including rickshaws and cycles.							
	Loaded.		Unloaded.										Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.																								
24th January	..	..	.	..	..	..	5	..	..	.	..		129	91	136	49	147	73	1,533	499	214	..		
25th January	..	..	..	..	..	..	..	..	..		.	..	324	138	260	78	264	77	2,162	485	238	4		
26th January	..	..	..	..	..	..	..	..	..		..	..	258	112	195	123	204	101	1,386	455	119	..		
27th January	..	..	..	..	..	..	..	..	.	..	..	.	172	113	118	99	155	86	1,887	477	122	..		
28th January	..	..	..	..	..	..	..	..	.	..	..		178	124	183	161	215	111	1,880	398	167	..		
29th January	..	..	..	..	..	..	..	..	..	.	..	..	218	123	214	91	228	99	1,979	417	150	..		
30th January	..	..	..	..	..	..	..	..	..	.	..		160	119	128	72	190	74	2,073	468	114	..		
Total ..	..	..	..	..	..	.	5	..	.		..	..	1,439	820	1,234	673	1,403	621	12,900	3,199	1,124	4		
Total—Day and night ..	..		..		..		5		..		..		2,259		1,907		2,024		16,099		1,128			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	..		..		..		3·75 tons		..		..		2,484·90 tons		476·75 tons		202·40 tons							

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	3·75
Average weight per day of 24 hours	..	..	..	0·53
Weight per foot width of road	..	..	..	0·04

Non-motor traffic:

			Tons
Total weight in seven days	..	..	3,164·05
Average weight per day of 24 hours	..	..	452·00
Weight per foot width of road	..	..	32·82

Total weight of all traffic in seven days—3,167·80 tons.

(1) Location of observation—7th mile (Mourigram).

(2) Index No. and name of road—No. 13, Mohiary-Kundu Road.

(3) Supervising officer—Babu J. N. Thakur, Overseer.

(4) Nature of road surface—Jhama metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0.″

(6) Average weight in tons of all traffic in 24 hours—433·93 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
21st November	16	3	16	3	29	18	35	26	2	.	12	2	14	12	11	15	465	116	1,480	283	49	1
22nd November ..	12	6	12	6	25	15	44	10	1	1	6	..	25	18	20	23	490	133	1,717	319	28	2
23rd November	10	10	10	10	30	27	83	60	..	..	10	4	26	15	20	21	588	202	1,570	507	60	7
24th November	12	6	12	6	30	18	48	18	..	2	19	3	69	..	17	42	529	160	1,537	451	42	2
25th November	11	11	11	11	33	18	77	47	1	1	12	4	15	12	20	7	615	292	1,728	723	37	7
26th November	21	13	21	13	28	18	56	22	2	2	5	7	27	40	27	40	665	368	1,651	505	43	12
27th November	20	21	20	21	28	12	27	27	..	..	12	12	18	30	18	30	555	217	1,742	993	22	8
Total ..	102	70	102	70	203	126	370	210	6	6	76	32	194	127	133	178	3,916	1,488	11,425	3,781	281	39
Total—Day and night ..	172		172		329		580		12		108		321		311		5,404		15,206		320	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	602·00 tons		172·00 tons		822·50 tons		435·00 tons		2·40 tons		32·40 tons		353·10 tons		77·75 tons		540·40 tons					

Motor traffic	Tons
Total weight in seven days	2,033·90
Average weight per day of 24 hours	290·55
Weight per foot width of metalled track	36·32

Non-motor traffic	Tons
Total weight in seven days .. .	1,003·65
Average weight per day of 24 hours .. .	143·38
Weight per foot width of metalled track ..	17·92

Total weight of all traffic in seven days—3,037·55 tons.

(1) Location of observation—7th mile.

(2) Index No. and name of road—No. 13. Mohiary-Kundu Road.

(3) Supervising officer—Babu J. N. Thakur.

(4) Nature of road surface—Jhama metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—351·41 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	3	2	3	2	29	13	32	16	..	..	14	2	62	12	62	12	415	63	1,782	1,635	17	9
25th January	2	1	2	1	25	14	22	18	2	..	17	4	68	17	68	25	737	114	1,649	1,712	45	10
26th January	2	1	2	1	31	16	26	16	..	..	13	3	55	27	55	32	680	207	1,713	1,009	37	3
27th January	2	2	2	2	25	14	28	10	..	..	12	..	43	30	43	33	832	363	2,027	1,088	41	..
28th January	6	..	6	..	27	15	24	12	..	..	12	..	65	5	65	18	812	177	1,908	1,162	30	..
29th January	1	2	1	2	28	14	21	18	..	..	13	1	47	20	47	20	531	183	1,637	1,336	16	2
30th January	9	..	8	1	28	18	20	21	..	..	10	..	43	31	43	31	749	229	1,559	1.415	20	6
Total ..	25	8	24	9	193	104	173	111	2	..	91	10	383	142	383	171	4,756	1,336	12,275	9,357	206	30
Total—Day and night ..	33		33		297		284		2		101		525		554		6,092		21,632		236	
	At 3·5 tons 115·50 tons		At 1 ton 33·00 tons		At 2·5 tons 742·50 tons		At ·75 ton 213·00 tons		At ·20 ton 0·40 tons		At ·3 ton 30·30 tons		At 1·1 tons 577·50 tons		At ·25 ton 138·50 tons		At ·1 ton 609·20 tons					

Motor traffic.			Tons.
Total weight in seven days	..	..	.. 1,104·40
Average weight per day of 24 hours	..	..	.. 157·77
Weight per foot width of metalled track	..	..	.. 19·72

Non-motor traffic.			Tons.
Total weight in seven days	..	..	1,355·50
Average weight per day of 24 hours	..	..	193·64
Weight per foot width of metalled track	..	..	24·20

Total weight of all traffic in seven days—2,459·90 tons.

(1) Location of observation—3rd mile.

(2) Index No. and name of road—No. 14. Andul-Ekabbarpur Road.

(3) Supervising officer—Babu J. N. Thakur, Overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—18′ 0.″

(6) Average weight in tons of all traffic in 24 hours—99·67 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
21st November	..	..	..	..	..	..	..	..	..	..	..	..	20	33	51	..	77	12	4,396	1,581	74	10
22nd November	..	..	..	..	..	..	..	..	..	..	..	..	38	26	42	10	65	42	4,450	1,433	41	19
23rd November	..	..	..	..	..	..	..	..	..	..	..	..	41	11	33	4	55	32	5,955	1,526	112	12
24th November	..	..	..	..	..	..	..	..	..	..	..	..	38	21	28	32	56	25	4,781	1,305	58	10
25th November	..	..	..	..	..	..	..	..	..	..	..	..	69	15	74	15	47	36	5,151	1,817	94	42
26th November ..	..	..	..	..	..	..	..	..	..	..	..	..	42	19	52	12	38	27	5,775	1,333	113	28
27th November	..	..	..	..	..	..	..	..	..	..	..	..	76	21	84	30	76	52	5,270	1,746	112	33
Total ..	..	..	..	..	..	..	..	..	..	..	.	..	324	146	364	103	414	226	35,778	10,741	634	154
Total—Day and night ..	..		..		..		..		..		..		470		467		640		46,519		788	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		517·00 tons		116·75 tons		64·00 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	..
Average weight per day of 24 hours	.. .. ..	..
Weight per foot width of road	.. .. ..	..

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	697·75
Average weight per day of 24 hours	.. ..	99·67
Weight per foot width of road	.. ..	5·54

Total weight of all traffic in seven days—697·75 tons.

(1) Location of observation—3rd mile (Alumpore).

(2) Index No. and name of road—No. 14. Andul-Ekabbarpur Road.

(3) Supervising officer—Babu J. N. Thakur.

(4) Nature of road surface—Metalled and unmetalled.

(5) Full width and metalled width of road—18′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—196·18 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	2	..	2	..	..	..	45	15	..	..	1	..	16	22	34	4	578	113	3,295	1,227	79	11
25th January	..	1	..	1	..	..	25	18	..	..	..	..	47	18	39	11	457	91	3,426	1,154	57	5
26th January	..	..	..	..	..	..	36	38	..	..	..	..	22	33	25	17	587	131	3,602	1,132	38	18
27th January	..	..	..	..	..	..	39	23	..	..	..	..	41	12	39	5	612	162	3,274	1,082	45	5
28th January	2	..	2	..	..	..	32	37	..	..	..	..	44	9	45	2	476	127	3.997	1,267	57	7
29th January	1	..	1	..	..	..	48	36	..	..	..	..	46	23	37	13	698	156	4,026	1,163	58	9
30th January	..	..	..	2	..	..	38	36	..	..	2	..	31	9	41	6	715	138	3,572	1,632	75	3
Total ..	5	1	5	3	..	..	263	203	..	..	3	..	247	126	260	58	4,123	918	25,494	8,657	409	58
Total—Day and night ..	6		8		....		466		....		3		373		318		5,041		34,151		467	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton.					
	21·00 tons		8·00 tons		....		349·50 tons		....		·90 tons		410·30 tons		79·50 tons		504·10 tons.					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	378·50
Average weight per day of 24 hours	.. .. ..	54·07
Weight per foot width of metalled track	.. .. ..	6·76

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	994·80
Average weight per day of 24 hours	.. ..	142·11
Weight per foot width of metalled track	.. ..	17·76

Total weight of all traffic in seven days—1,373·30 tons.

(1) Location of observation—1st mile Jhorehat.

(2) Index No. and name of road—No. 19. Mohiary-Rajganj Road.

(3) Supervising officer—Babu J. N. Thakur, Overseer.

(4) Nature of road surface—Jhama metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—404·66 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
21st November	7	1	7	1	7	6	50	24	..		2	3	55	28	50	25	340	43	2,870	1,028	90	28
22nd November ..	2	..		..	6	3	90	47	.	..	4	..	55	53	34	27	341	67	2,276	979	62	39
23rd November ..	4	1	5	1	8	3	127	66	1	1	1	..	175	37	75	43	370	165	2,795	1,227	170	80
24th November ..	3	1	2	1	3	3	123	105	..	..	6	2	158	65	109	42	367	159	2,727	1,525	97	41
25th November ..	2	1	2	1	6	3	80	36	.	..	11	3	124	33	110	28	481	93	2,385	942	108	49
26th November ..	2	..	1	1	4	3	116	32	..	..	..	..	126	68	103	26	477	101	2,720	1,037	65	83
27th November ..	2	2	..	..	4	3	81	63	..	..	..	..	113	19	84	27	368	110	3,143	863	106	32
Total ..	22	6	17	5	38	24	667	373	1	1	24	8	806	303	565	218	2,744	738	18,916	7,601	698	352
Total—Day and night ..	28		22		62		1,045		2		32		1,109		783		3,482		26,517		1,050	
	At 3·5 tons 98·00 tons		At 1 ton 22·00 tons		At 2·5 tons 155 00 tons		At ·75 ton 783·75 tons		At ·20 ton ·40 tons		At ·3 ton 9·60 tons		At 1·1 tons 1,219·90 tons		At ·25 ton 195·75 tons		At ·1 ton. 348·20 tons.					

Motor traffic:

	Tons.
Total weight in seven days	1,059·15
Average weight per day of 24 hours	151·31
Weight per foot width of metalled track	18·91

Non-motor traffic:

	Tons.
Total weight in seven days	1,773·45
Average weight per day of 24 hours	253·35
Weight per foot width of metalled track	31·67

Total weight of all traffic in seven days—2,832 60 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 19. Mohiary-Rajganj Road.

(3) Supervising officer—Babu J. N. Thakur, Overseer.

(4) Nature of road surface—Jhama metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—239·96 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	1	..	..	..	4	5	67	14	..	..	2	..	60	17	52	3	370	43	3,013	1,009	91	30
25th January	..	..	..	..	3	3	29	61	..	..	..	..	80	33	117	29	225	91	2,390	842	110	75
26th January	..	1	..	..	3	3	40	41	..	..	..	..	40	27	39	34	371	71	2,239	822	125	33
27th January	1	..	1	..	3	3	43	53	..	..	..	..	57	26	64	54	305	56	2,236	718	91	25
28th January	..	..	..	..	3	2	57	16	..	..	..	..	81	15	79	41	312	49	2,338	602	76	60
29th January	..	..	..	..	3	3	49	23	..	..	2	..	60	19	86	27	294	65	2,328	763	83	11
30th January	2	..	1	1	3	6	53	28	..	..	2	.	71	30	43	13	276	88	2,509	1,196	24	16
Total ..	4	1	2	1	22	25	338	236	..	..	6	..	449	167	480	201	2,153	463	17,053	5,952	600	250
Total—Day and night ..	5		3		47		574		....		6		616		681		2,616		23,005		850	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton.					
	17·50 tons		3·00 tons		117·50 tons		430·50 tons		....		1·80 tons		677·60 tons		170·25 tons		261·60 tons.					

Motor traffic.	Tons.
Total weight in seven days	568·50
Average weight per day of 24 hours	81·21
Weight per foot width of metalled track	10·15

Non-motor traffic.	Tons.
Total weight in seven days	1,111·25
Average weight per day of 24 hours	158·75
Weight per foot width of metalled track	19·84

Total weight of all traffic in seven days—1,679·75 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 25. Ashutosh Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Metalled.

(5) Full width and metalled width of road—10′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—72·59 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
22nd November ..	..	..	..	..	..	..	32	18	..	..	..	..	11	11	14	35	93	10	944	70	23	23
23rd November ..	..	..	..	..	..	..	31	7	..	..	..	..	16	3	15	10	34	4	616	31	12	4
24th November ..	..	..	..	..	..	..	38	8	..	..	..	..	36	6	29	6	50	1	484	30	15	5
25th November ..	..	..	..	..	..	..	29	13	..	..	..	..	17	14	11	11	60	13	493	107	3	7
26th November ..	..	..	..	..	..	..	21	12	..	..	..	..	15	13	6	13	46	..	1,118	46	4	..
27th November ..	..	..	..	..	..	..	26	14	..	..	..	..	7	3	6	17	45	..	601	57	8	3
28th November ..	..	..	..	..	..	..	40	15	..	..	..	..	14	5	25	7	50	..	368	26	10	3
Total ..	..	..	..	..	..	..	217	87	..	..	..	..	116	55	106	99	378	28	4,624	367	75	45
Total—Day and night ..	....		....		....		304		....		....		171		205		406		4,991		120	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton.					
	....		....		....		228·00 tons		....		....		138·10 tons		51·25 tons		40·60 tons.					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	228·00
Average weight per day of 24 hours	.. .. ..	32·60
Weight per foot width of metalled track	.. .. ..	4·10

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	279·95
Average weight per day of 24 hours	.. ..	39·99
Weight per foot width of metalled track	.. ..	4·99

Total weight of all traffic in seven days—507·95 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 25. Ashutosh Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Metalled.

(5) Full width and metalled width of road—10′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—148·21 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	..	..	..	..	..	..	50	12	..	..	..	..	47	16	33	2	47	9	692	44	65	15
25th January	..	..	..	..	..	..	61	15	2	..	..	..	33	15	27	26	59	6	512	107	42	10
26th January	..	..	..	..	..	..	60	20	2	..	..	..	44	23	16	23	79	11	468	166	56	15
27th January	..	..	..	..	..	..	59	20	2	..	..	..	46	25	44	22	74	19	511	110	21	21
28th January	..	..	..	..	..	..	48	37	..	..	..	..	49	..	28	21	60	..	773	207	32	12
29th January	..	..	..	..	..	..	65	18	..	..	..	..	26	9	34	31	92	21	577	248	26	11
30th January	..	..	..	..	..	..	52	46	..	..	..	..	36	50	27	31	122	20	733	309	32	23
Total ..	..	..	..	..	..	..	395	168	6	..	..	..	281	138	209	156	533	86	4,266	1,191	274	107
Total—Day and night ..	....		....		....		563		6		....		419		365		619		5,457		381	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		....		422·25 tons		1·20 tons		....		460·90 tons		91·25 tons		61·90 tons					

Motor traffic.	Tons.
Total weight in seven days	423·45
Average weight per day of 24 hours	60·49
Weight per foot width of metalled track	7·56

Non-motor traffic.	Tons.
Total weight in seven days	614·05
Average weight per day of 24 hours	87·72
Weight per foot width of metalled track	10·96

Total weight of all traffic in seven days—1,037·50 tons.

(1) Location of observation—Mile 2·25.

(2) Index No. and name of road—No. 27. Mugkalyan Road.

(3) Supervising officer—Babu S. K. Mookherjee, Overseer.

(4) Nature of road surface—Metalled.

(5) Full width and metalled width of road—12′0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—60·74 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
	Loaded.		Unloaded.										Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1936.																								
15th November ..	..	..	..	..	..	..	13	5	..	..	..	..	21	8	22	2	129	53	1,319	434	24	..		
16th November ..	..	..	..	..	..	..	12	6	..	.	..	..	15	5	13	2	109	55	1,359	401	18	3		
17th November ..	..	..	..	..	..	..	8	3	..	..	.	..	10	5	12	7	208	77	1,528	502	23	..		
18th November ..	..	..	..	..	..	..	12	4	..	..	..	..	18	9	17	3	91	75	1,607	417	17	2		
19th November ..	..	..	..	..	..	..	12	4	..	..	..	..	20	7	21		124	69	1,465	487	28	15		
20th November ..	..	..	..	..	..	..	11	6	..	..	..	..	23	4	11	2	99	62	1,432	479	16	..		
21st November ..	..	..	..	..	..	.	13	4	..	..	..	..	11	7	10	..	64	79	1,700	471	17	17		
Total ..	..	..	.	..	..	..	81	32	..	..	..	..	118	45	106	21	824	470	10,410	3,191	143	37		
Total—Day and night ..	....		....		....		113		....		....		163		127		1,294		13,601		180			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At 3 ton		At 1 1 tons		At ·25 ton		At ·1 ton							
	....		....		....		84·75 tons		....		. . .		179·30 tons		31·75 tons		129·40 tons							

Motor traffic.	Tons.
Total weight in seven days	84·75
Average weight per day of 24 hours	12·11
Weight per foot width of metalled track	1·51

Non-motor traffic.	Tons.
Total weight in seven days	340·45
Average weight per day of 24 hours . ..	48·63
Weight per foot width of metalled track	6·08

Total weight of all traffic in seven days—425·20 tons.

(1) Location of observation—Near Antilla Bridge.

(2) Index No. and name of road—No. 27. Bagnan-Mugkalyan Road.

(3) Supervising officer—Babu S. K. Mooherjee.

(4) Nature of road surface—Metalled.

(5) Full width and metalled width of road—12 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—61·40 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January ..	..	..	..	..	..	..	18	6	..	..	..	..	10	3	6	1	197	48	1,135	475	38	4
25th January ..	..	..	..	..	..	..	14	6	..	..	..	..	17	2	17	2	158	55	1,210	508	19	2
26th January ..	..	..	..	..	..	..	15	7	..	..	..	..	17	2	9	3	193	69	1,529	557	14	2
27th January ..	..	..	..	..	..	..	17	5	..	..	..	..	13	3	8	4	146	83	1,323	542	16	3
28th January ..	..	..	..	..	..	..	14	6	..	..	..	..	6	3	4	2	133	71	1,250	529	20	4
29th January ..	..	..	..	..	..	..	12	6	..	..	..	..	23	1	15	2	174	91	1,481	521	14	..
30th January ..	..	..	..	..	..	..	15	8	..	..	..	..	14	2	3	2	197	95	1,785	604	23	2
Total ..	..	..	..	..	..	..	105	44	..	..	..	..	100	16	62	16	1,198	512	9,713	3,736	144	17
Total—Day and night ..	..		..		..		149		..		..		116		78		1,710		13,449		161	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		111·75 tons		..		..		127·60 tons		19·50 tons		171·00 tons					

Motor traffic.				Tons.
Total weight in seven days	..	..	..	111·75
Average weight per day of 24 hours	..	..	..	15·96
Weight per foot width of metalled track	..	..	..	1·99

Non-motor traffic.			Tons.
Total weight in seven days	..	..	318·10
Average weight per day of 24 hours	..	..	45·44
Weight per foot width of metalled track	..	..	5·68

Total weight of all traffic in seven days—429·85 tons.

(1) Location of observation—1st mile (Khadinan).

(2) Index No. and name of road—No. 28. Bagnan-Fatehpur Road.

(3) Supervising officer—Babu S. K. Mookherjee, Overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—19·55 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
15th November ..	..	..	..	..	..	..	2	..	..	..	..	..	12	..	10	..	21	5	432	140	17	3
16th November ..	..	..	..	..	..	..	..	..	..	..	..	..	7	..	9	..	21	7	484	155	14	7
17th November ..	..	..	..	..	..	..	2	..	..	..	..	..	13	..	13	..	31	10	526	158	23	3
18th November ..	..	..	..	..	..	..	..	..	..	..	..	..	10	..	10	2	24	4	493	114	18	2
19th November ..	..	..	..	..	..	..	2	..	..	..	..	..	14	..	16	..	32	2	510	173	32	5
20th November ..	..	..	..	..	..	..	..	..	..	..	..	..	9	..	10	..	29	5	496	166	34	3
21st November ..	..	..	..	..	..	..	..	..	..	..	..	..	13	2	10	1	39	11	582	165	24	..
Total ..	..	..	..	..	..	..	6	..	..	..	..	..	78	2	78	3	197	44	3,523	1,071	162	23
Total—Day and night ..	..		..		..		6		..		..		80		81		241		4,594		185	
	At 3·5 tons		At ·1 ton		At 2·5 tons.		At ·75 ton		At ·20 ton		At 3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		4·50 tons		..		..		88·00 tons		20·25 tons		24·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	4·50
Average wieght per day of 24 hours	0·64
Weight per foot width of road	0·04

Non-motor traffic:

	Tons.
Total weight in seven days	132·35
Average weight per day of 24 hours	18·91
Weight per foot width of road	1·26

Total weight of all traffic in seven days—136·85 tons.

(1) Location of observation—Khadinan.

(2) Index No. and name of road—No. 28. Bagnan-Fatehpur Road.

(3) Supervising officer—Babu S. K. Mookherjee, Overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—44·85 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January ..	..	..	..	..	..	..	..	..	..	..	..	..	15	..	15	..	41	12	359	80	8	3
25th January ..	..	..	..	..	..	..	..	..	..	..	..	..	19	5	18	5	33	15	437	66	12	3
26th January ..	..	..	..	..	..	..	..	..	..	..	..	..	25	..	25	..	41	8	460	191	15	..
27th January ..	..	..	..	..	..	..	..	..	..	..	..	..	32	..	32	..	24	24	365	52	11	4
28th January ..	..	..	..	..	..	..	..	..	..	..	..	..	40	9	40	9	29	22	395	49	11	..
29th January ..	..	..	..	..	..	..	..	..	..	..	..	..	33	2	33	2	23	12	383	99	16	..
30th January ..	..	..	..	..	..	..	..	..	..	..	..	..	25	3	25	3	31	19	386	112	12	..
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	189	19	188	19	222	112	2,785	649	85	10
Total—Day and night ..	..		..		..		..		..		..		208		297		334		3,434		95	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		228·80 tons		51·75 tons		33·40 tons					

Motor traffic:

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

Non-motor traffic:

	Tons.
Total weight in seven days	313·95
Average weight per day of 24 hours	44·85
Weight per foot width of road	2·99

Total weight of all traffic in seven days—313·95 tons.

(1) Location and observation—4th mile.

(2) Index No. and name of road—No. 29. Bagnan-Mankur Road.

(3) Supervising officer—Babu S. K. Mookherjee.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—33·71 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
15th November ..	..	..	..	..	..	..	15	4	..	..	..	..	8	3	9	3	58	9	617	275	23	11
16th November ..	..	..	..	..	..	..	13	4	..	..	..	..	8	1	9	..	48	8	644	327	35	12
17th November ..	..	..	..	..	..	..	16	3	..	..	..	..	12	1	10	..	43	9	683	260	27	9
18th November ..	..	..	..	..	..	..	12	4	..	..	..	..	9	2	10	..	56	10	669	273	48	7
19th November ..	..	..	..	..	..	..	12	4	..	..	..	..	11	5	7	1	46	9	755	320	44	12
20th November ..	..	..	..	..	..	..	13	3	..	..	..	..	9	2	10	..	49	12	750	307	33	10
21st November ..	..	..	..	..	..	..	14	4	..	..	..	..	8	..	9	..	48	8	714	366	31	8
Total ..	..	..	..	..	..	..	95	26	..	..	..	..	65	14	64	4	348	65	4,832	2,128	241	69
Total—Day and night ..	..		..		..		121		..		..		79		68		413		6,960		310	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		90·75 tons		..		..		86·90 tons		17·00 tons		41·30 tons					

Motor traffic:

					Tons.
Total weight in seven days	..	..	..	..	90·75
Average weight per day of 24 hours	..	..	..	..	12·96
Weight per foot width of road	..	..	..	..	0·86

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	145·20
Average weight per day of 24 hours	..	..	20·75
Weight per foot width of road	.	..	1·38

Total weight of all traffic in seven days—235·95 tons.

(1) Location of observation—Chaldhowria.

(2) Index No. and Name of road—No. 29. Bagnan-Mankur Road.

(3) Supervising officer—Babu S. K. Mookherjee, Overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic of 24 hours—31·40 tons.

<table>
<tr><th rowspan="4">Date.</th><th colspan="10">Motor traffic.</th><th colspan="8">Non-motor traffic.</th><th colspan="4"></th></tr>
<tr><th colspan="4">Lorries.</th><th colspan="2" rowspan="2">Buses.</th><th colspan="2" rowspan="2">Cars and taxis.</th><th colspan="2" rowspan="2">Motor cycles.</th><th colspan="2" rowspan="2">4-wheeled carts, hackney carriages, etc.</th><th colspan="4">Bullock carts.</th><th colspan="2" rowspan="2">Other types of vehicles including rickshaws and cycles.</th><th colspan="2" rowspan="2">Foot passengers.</th><th colspan="2" rowspan="2">Cattle.</th></tr>
<tr><th colspan="2">Loaded.</th><th colspan="2">Unloaded.</th><th colspan="2">Loaded.</th><th colspan="2">Unloaded.</th></tr>
<tr><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th><th>Day.</th><th>Night.</th></tr>
<tr><td>1937.</td><td colspan="22"></td></tr>
<tr><td>24th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>20</td><td>5</td><td>..</td><td>..</td><td>..</td><td>..</td><td>9</td><td>2</td><td>9</td><td>2</td><td>114</td><td>23</td><td>770</td><td>259</td><td>91</td><td>..</td></tr>
<tr><td>25th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>17</td><td>4</td><td>..</td><td>..</td><td>..</td><td>..</td><td>1</td><td>..</td><td>3</td><td>1</td><td>50</td><td>13</td><td>480</td><td>196</td><td>103</td><td>..</td></tr>
<tr><td>26th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>13</td><td>4</td><td>..</td><td>..</td><td>..</td><td>..</td><td>2</td><td>1</td><td>3</td><td>1</td><td>50</td><td>22</td><td>490</td><td>147</td><td>78</td><td>..</td></tr>
<tr><td>27th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>14</td><td>3</td><td>..</td><td>..</td><td>..</td><td>..</td><td>6</td><td>3</td><td>6</td><td>..</td><td>68</td><td>17</td><td>688</td><td>242</td><td>133</td><td>6</td></tr>
<tr><td>28th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>16</td><td>3</td><td>..</td><td>..</td><td>..</td><td>..</td><td>10</td><td>2</td><td>13</td><td>1</td><td>56</td><td>17</td><td>470</td><td>159</td><td>207</td><td>86</td></tr>
<tr><td>29th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>9</td><td>3</td><td>..</td><td>..</td><td>..</td><td>..</td><td>5</td><td>..</td><td>6</td><td>..</td><td>47</td><td>13</td><td>510</td><td>118</td><td>173</td><td>4</td></tr>
<tr><td>30th January ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>14</td><td>4</td><td>..</td><td>..</td><td>..</td><td>..</td><td>8</td><td>..</td><td>4</td><td>..</td><td>52</td><td>27</td><td>480</td><td>240</td><td>68</td><td>8</td></tr>
<tr><td>Total ..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>..</td><td>103</td><td>26</td><td>..</td><td>..</td><td>..</td><td>..</td><td>41</td><td>8</td><td>44</td><td>5</td><td>437</td><td>132</td><td>3,888</td><td>1,361</td><td>851</td><td>104</td></tr>
<tr><td>Total—Day and night ..</td><td colspan="2">....</td><td colspan="2">....</td><td colspan="2">....</td><td colspan="2">129</td><td colspan="2">....</td><td colspan="2">....</td><td colspan="2">49</td><td colspan="2">49</td><td colspan="2">569</td><td colspan="2">5,249</td><td colspan="2">955</td></tr>
<tr><td></td><td colspan="2">At 3·5 tons
..</td><td colspan="2">At 1 ton
..</td><td colspan="2">At 2·5 tons
..</td><td colspan="2">At ·75 ton
96·75 tons</td><td colspan="2">At ·20 ton
..</td><td colspan="2">At ·3 ton
..</td><td colspan="2">At 1·1 tons
53 90 tons</td><td colspan="2">At ·25 ton
12 25 tons</td><td colspan="2">At ·1 ton
58·90 tons.</td><td colspan="2"></td><td colspan="2"></td></tr>
</table>

Motor traffic		Tons.
Total weight in seven days	.. .. ..	96·75
Average weight per day of 24 hours	.. .. ..	13·82
Weight per foot width of road	.. .. ..	0·92

Non-motor traffic		Tons.
Total weight in seven days	.. ..	123·05
Average weight per day of 24 hours	.. ..	17·58
Weight per foot width of road	.. ..	1·17

Total weight of all traffic in seven days—219·80 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 46. Munshirhat-Ghoradaha Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—12′ 0″.

(6) Average weight in tons of all traffic in 24 hours—46·85 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
22nd November ..	..	..	..	..	..	..	12	6	..	..	..	..	18	3	8	11	30	6	1,124	455	23	19
23rd November ..	..	..	..	..	..	..	12	8	..	..	..	..	13	6	22	6	47	15	692	132	128	7
24th November ..	..	..	..	..	..	..	16	8	..	..	..	..	12	5	4	7	39	6	735	293	71	13
25th November ..	..	..	..	..	..	..	15	4	..	..	..	..	21	2	8	5	45	6	715	201	78	11
26th November ..	..	..	..	..	..	..	12	6	..	..	..	..	15	5	18	6	56	17	1,130	289	85	25
27th November ..	..	..	..	..	..	..	12	8	..	..	..	..	19	10	9	6	36	12	646	289	39	26
28th November ..	..	..	..	.	..	..	14	11	..	..	..	..	6	6	3	4	31	10	612	262	53	15
Total ..		..	..	..	..	..	93	51	..	..	..	..	104	37	72	45	284	72	5,654	1,921	477	116
Total—Day and night ..	....		....		....		144		....		....		141		117		356		7,575		593	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		108·00 tons		..		.		55·10 tons		29·25 tons		35·60 tons					

Motor traffic		Tons.
Total weight in seven days	.. .. ..	108·00
Average weight per day of 24 hours	.. .. ..	15·43
Weight per foot width of road	.. .. ..	1 28

Non-motor traffic		Tons.
Total weight in seven days	.. ..	219 95
Average weight per day of 24 hours	.. ..	31·42
Weight per foot width of road	.. ..	2 62

Total weight of all traffic in seven days—327 95 tons.

(1) Location of observation—1st mile.

(2) Index No. and name of road—No. 46. Munshirhat-Ghoradah Road.

(3) Supervising officer—Babu K. K. Roy Choudhury.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—12′ 0″

(6) Average weight in tons of all traffic in 24 hours—83·16 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	..	..	..	..	..	..	12	1	..	.	..	..	37	9	49	12	77	13	719	225	130	81
25th January	..	..	..	..	..	..	10	2	..	..	..	..	48	15	39	27	57	16	657	241	140	57
26th January	..	..	..	..	..	..	8	5	..	..	..	..	29	16	36	22	55	14	597	126	131	98
27th January	..	..	..	..	..	..	7	3	..	..	..	..	22	33	23	18	26	21	491	157	111	105
28th January	..	..	..	..	..	..	7	2	..	..	..	..	35	21	37	20	30	17	712	173	80	90
29th January	..	..	..	..	..	..	8	3	..	..	..	..	35	17	30	20	30	15	484	270	111	141
30th January	..	..	..	..	..	..	2	3	..	..	..	..	17	23	20	27	7	19	290	282	82	152
Total ..	..	..	..	..	..	..	54	19	..	..	..	..	223	134	234	146	282	115	3,950	1,476	785	724
Total—Day and night ..	..		..		..		73		..		..		357		380		397		5,426		1,509	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		54·75 tons		..		..		392·70 tons		95·00 tons		39·70 tons					

Motor traffic

		Tons.
Total weight in seven days	.. .. ..	54·75
Average weight per day of 24 hours	.. .. ..	7·82
Weight per foot width of road	.. .. ..	0·65

Non-motor traffic

		Tons.
Total weight in seven days	.. ..	527·40
Average weight per day of 24 hours	.. ..	75·34
Weight per foot width of road	.. ..	6·22

Total weight of all traffic in seven days—582·15 tons.

Appendix VIII.

Howrah.

Diagram showing average weight in tons of motor and non-motor traffic (per day of 24 hours) with figures for pedestrian traffic.

Serial No.	Index No.	Name. Road from—
1	1P	Grand Trunk Road.
2	1	Howrah to Jagatballavpur.
3	2	Old Benares Road.
4	10	Santragachi to Mohiary.
5	4	Narendrapur to Amta.
6	13	Mohiary to Kundu.
7	8	Makardah to Andul.
8	19	Mohiary to Rajganj.
9	14	Andul to Ekkabarpur.
10	5	Domjur to Bowria.
11	25	Ashutosh Road.

Serial No.	Index No.	Name. Road from—
12	3	Jagatballavpur to Amta.
13	31	Makardah to Ekshora.
14	46	Munshirhat to Ghorda.
15	15	Domjur to Kuldanga.
16	27	Bagnan to Mugkalyan.
17	58	Baragachi to Jalasi.
18	28	Bagnan to Fatehpur.
19	53	Nuniahat to Kamalpur.
20	55	Bowria to Basudebpur.
21	73	Sijberia to Panchla.
22	16	Uluberia to Kharuberia.
23	29	Bagnan to Mankar.

NOTE.—Roads carrying traffic of less than 31 tons per day of 24 hours have not been included in the graph.

Reference:—

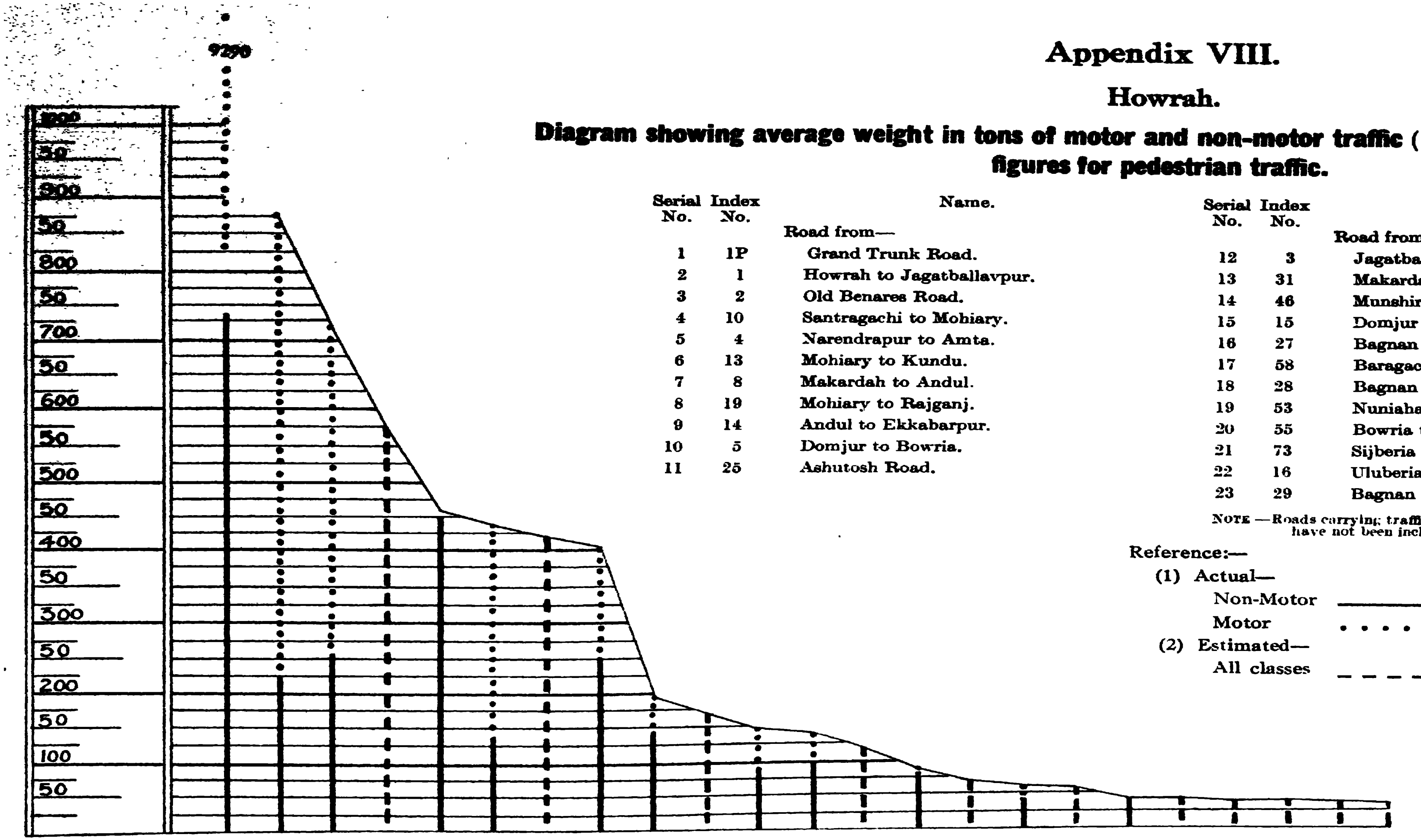
(1) Actual—

Non-Motor ————

Motor • • • • • • •

(2) Estimated—

All classes – – – – – –



Pedestrians ..	36,987	2,183	138	.	2,299	2,175	..	3,788	4,879	..	779	902	..	775	..	1,921	..	491	..	..	..	..	749
Total N. M. T. & M. T.	9,290	880	723	*575*	453	434	*420*	404	196	*170*	148	145	*115*	83	*70*	61	*55*	45	*45*	*40*	*40*	*35*	31
Motor traffic ..	7,827	655	468	..	1	291	..	151	54	..	60	49	..	8	..	16	..	..	..	..	..	..	14
Non-motor traffic ..	1,463	225	255	..	452	143	..	253	142	..	88	96	..	75	..	45	..	45	..	..	..	..	17
Serial No. ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

Appendix IX.

Howrah.

Statement showing particulars of items included in the road system recommended for improvement.

Index No.	Classification.	Location. From—	Location. To—	Location. Route.	Purpose served.	Sub-sections. No.	Sub-sections. From—	Sub-sections. To—	Length in miles.	Rough cost in rupees. Specification "A."	Rough cost in rupees. Specification "B."
1	2	3	4	5	6	7	8	9	10	11	12
A ..	Provincial—Trunk	Howrah ..	Bally ..	Following Government road No. 1P	This is the section of the Grand Trunk road in the Howrah district and calls for no special remarks.	1	Howrah ..	Bally ..	7·00	2,50,000	..
B ..	Ditto ..	Ditto ..	Baigachi ..	Following District Board road No. 2	The road forms a section of the old Benares road along which route it is proposed to develop a bi-pass to the Grand Trunk road between Howrah and Memari.	1	Howrah ..	Baigachi ..	7·45	6,00,000	4,50,000
C ..	Ditto .. (Sub-sections 3 and 4 are District—Main).	Baigachi on item B above.	"Z" on item "K" below.	Following District Board road No. 6 to Domjur, District Board road No. 15 to Gangadharpur, new alignment from thence to Kulgachia railway station via Chak Sonthy-Ayma, Kumar Chak Jagrampur and Bangalpur; thence by new alignment to meet item "K" at "Z."	The road will form the main central line of communication running through the heart of the north-eastern and central portion of the district.	1 2 3 4 5	Baigachi .. Domjur .. Jujeswar. Chak Sonthy-Ayma. Kulgachia.	Domjur .. Jujeswar .. Chak Sonthy-Ayma. Kulgachia. "Z."	4·80 8·00	2,25,000 4,00,000	1,50,000 2,75,000
D ..	District—Main ..	Howrah ..	Domjur on item C above.	Following District Board roads Nos. 13 and 7.	The road will serve a very important area lying to the west of Howrah and will connect at Domjur with the central main road (item C).	1 2	Howrah .. Maurigram.	Maurigram .. Domjur.	..	..	..
E ..	Ditto ..	Bipra-Nawpara on item D above.	Wadpur on item C above.	Following District Board road No. 22.	The road will form a short link between item C and D.	1	Bipra-Nawpara ..	Wadpur ..	..	..	..
F ..	Provincial—Trunk (Sub-sections 1 and 2 are District—Main).	Bauria on west bank of Hooghly.	Debandi on item G below.	Following District Board road No. 5 to one mile beyond Panchla, thence by new alignment for about 5 miles to Maju railway station and thence by new alignment to Debandi.	The road will form a main line of communication running north through the centre of the eastern portion of the district.	1 2 3 4	Bauria .. Panchla .. Jujeswar .. Maju ..	Panchla .. Jujeswar .. Maju .. Debandi ..	.. .. 4·00 2·00	.. .. 2,00,000 1,25,000	.. .. 1,50,000 75,000
G ..	Inter-district—Main (Sub-section 1 is Provincial—Trunk).	Amta ..	Sitapur (Hooghly district boundary near Jagatballvpur railway station).	Following District Board road No. 3 to Jagatballavpur railway station and Local Board road No. 9 to boundary.	The road forms a branch to the main road—item F above, serving to tap a large area to the north-west of the Howrah-Amta Railway line.	1 2	Amta .. Debandi ..	Debandi .. Sitapur. ..	5·00 7·00	2,50,000 3,25,000	1,75,000 2,00,000

H ..	Provincial—Trunk	Amta ..	Palaspai (Hooghly district, boundary).	Following District Board road No. 26.	The road, together with item I below, will serve an area lying on the west of the Damodar which has practically no communication at present. It will act as a good feeder to the railway.	1 2	Amta .. Kankrol ..	Kankrol Palaspai.	} 8·00	9,00,000	7,50,000
I ..	District—Main ..	Bagan	Kankrol on item H above.	Following District Board road No. 29 for about 4 miles and thence by new alignment to Kankrol *via* Kalyanpur, Bholsari, Jhamtia and Joypur.	The road, together with item H above, will serve a large area on the west of the district. It will also act as a feeder to the railway at Bagnan.	1 2	Bagnan .. Kalyanpur	Kalyanpur .. Kankrol.	..	..	..
J ..	Ditto ..	Uluberia ..	Raghudebpur on item F above.	Following new alignment for about 2 miles and thence District Board road No. 73 to Raghudebpur.	The road together with portions of items C, D, E and F will form the through connection between Howrah and the subdivisional headquarters at Uluberia.	1	Uluberia ..	Raghudebpur ..	..	..	..
K ..	Ditto ..	Ditto ..	Kulian on item L below.	Following District Board road No. 41 for about 6 miles and thence by new alignment to Kulian.	The road will form the main artery leading towards the southern portion of the subdivision.	1 2	Uluberia .. "Z" ..	"Z" Kulian. ..	..	..	..
L ..	Ditto ..	Bagnan ..	Shyampur ..	Following District Board road No. 27 and a new alignment leading to Shyampur on the west bank of the Damodar river.	The road will provide a main line of communication in the strip of country lying between the Damodar and the Rupnarayan rivers in the south of the district.	1 2 3	Bagnan .. Kulian .. Sultanpur ..	Kulian .. Sultanpur. Shyampur.	..	..	..
M ..	District—Secondary	Sultanpur on item L above.	Jhumjhumi on east bank of the Rupnarayan opposite Tamluk.	Following new alignment for about 2 miles and thence District Board road No. 60 to the east bank of the Rupnarayan opposite Tamluk, a subdivisional headquarters of the Midnapore district.	The road forms a short western extension of item L affording a link with the road system in the Midnapore district. The Rupnarayan river will, however, remain unbridged.	1	Sultanpur ..	Jhumjhumi ..	..	..	..

Appendix X.

Howrah.

Rough estimates for the roads selected to form the scheme for improved roads in the district.

NOTE.—Estimates for the following roads have not been included in this appendix as they have either not been prepared or else, although prepared, were received too late for check :—

Road No. C—Sub-sections 3 to 5.

Road No. D—Sub-sections 1 and 2.

Road No. E—Sub-section 1.

Road No. F—Sub-sections 1 and 2.

Road No. I—Sub-sections 1 and 2.

Road No. J—Sub-section 1.

Road No. K—Sub-sections 1 and 2.

Road No. L—Sub-sections 1 to 3.

Road No. M—Sub-section 1.

ESTIMATE No. 1.

Road No. A—Sub-section 1—Howrah to Bally.

Reconstruction of Bally Khal Bridge.

	Rs.	Rs.
1. Land	65,000	
2. Approaches	57,970	
Total ..	1,22,970	
Say ..		1,23,000

(Taken from the Public Works Department file on the subject.)

Bridge—Length 180 r. ft. (in 3 spans).

Width=27 r. ft.

Footpaths=8′ 0″ wide each.

Cost of bridge and footpaths—

	Rs.	Rs.
3. Bridge=180′×27′=4,860 s. ft. At Rs. 17 per s. ft.	82,620	
4. Footpaths=2×180′×8′=2,880 s. ft. At Rs. 15 per s. ft.	43,200	
		1,25,820
Total ..		2,48,820
Say ..		2,50,000

ESTIMATE No. 2.

Road No. B—Sub-section 1—Howrah to Balgachi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs. a.
*Howrah { 1	35	24,000	1·00	..	..	..	3	24, 32, 26	35	20	36 8
*Howrah { 2	44	10,000	1·75	..	..	.	3	24, 36, 26	36, 40, 38	20	37 8
3	43	300	2·00	1·50	..	..	3	20	28	20	38 8
4	38	200	1·25	0·75	..	..	3	20	26	20	39 8
5	39	200	1·50	1·00	..	..	3	21	28	20	40 8
6	38	200	1·75	1·00	..	..	3	21	27	20	41 8
7	38	200	1·25	0·50	..	..	3	22	30	20	42 8
(7·45) 8	34	200	0·50	0·25	..	..	3	20	27	20	43 8
Total 7·45	230	1,300	11·00	..	..	..	24	172, 176	237, 239	160	320 0
Average	38·3	217	1·30	..	..	..	3	21·5, 22	29·6, 29·8	20	40 0
Say ..	38	250	..	..	..	..	..	21, 22	29, 29	..	..

Analysis of stone metal for 100 c. ft.—

	Rs. a.
Stone metal at Pakur	5 8
Railway freight from Pakur to Howrah ..	16 10
Unloading	0 8
Stacking	1 6
Consolidation	6 0
	30 0
Contractor's profit at 10 per cent.	3 0
	33 0
Carting up to 1st mile	3 8
	36 8

Re. 1 is added for every extra mile of carting.

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork ..	1,000 c. ft.	5 0	Single brick soling 3" ..	100 s. ft.	6 0
Turfing ..	1,000 s. ft.	3 8	Double brick soling 6" ..	100 s. ft.	11 8
Brick-on-end edging ..	100 r. ft.	8 0			

*As full land width will not be taken within the town of Howrah, the first two miles have been excluded from the average.

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—2' 0" arched masonry culvert.	No	No	3	1—3' dia. R. C. pipe culvert.
		1—110' 0" trough plate decking girder bridge.	,,	,,	110	Bridge (excluded from total).
		3—14' 0" } 8—12' 0" } arched masonry bridge.	,,	,,	140	Ditto (excluded from total).
		138' 0"				
		2—8' 3" buckle plated masonry culvert.	,,	,,	20	Bridge.
2	3	Nil ..	..	..	..	
Carried over			..	..	23	
		Bridges of over 100 ft.	..	..	250	

Howrah—Estimate No. 2—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
		Bridges of over 100 ft.			250	
Brought forward					23	
3	3	1—1′ 6″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—10′ 0″ do. ..	,,	,,	15	Bridge.
		1—4′ 0″ do. ..	,,	,,	4	1—4′ dia. R. C. pipe culvert.
4	3	1—4′ 0″ do. ..	,,	,,	4	1 ditto.
		1—4′ 0″ do. ..	,,	,,	4	1 ditto.
		2—12′ 6″ do. ..	,,	,,	25	Bridge.
5	3	1—1′ 6″ do. ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ do. ..	,,	,,	3	1 ditto.
		1—7′ 0″ do. ..	,,	,,	8	2—4′ ditto.
6	3	1—2′ 0″ do. ..	,,	,,	3	1—3′ ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 3″ do. ..	,,	,,	3	1 ditto.
7	3	1—2′ 3″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
(7·45) 8	3	Nil ..	..	..	..	
Total 6 miles excluding mileages having no bridges and culverts.					113	or 18·83 r. ft. per mile.

Bridges of over 100′ in length	..	250
Allowance of 25 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.		
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 7·45 (25—18·83) = 45·96 r. ft.		
∴ R. C. pipe culverts = ¼ × 45·96 = 11·49′, say ..	..	12
Minor bridges of length up to 30′ = ¾ × 45·96′ = 34·47′, say	..	40
Total	..	415 r.ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	250
Constructing minor bridges of length up to 30 ft.	..	100
Constructing reinforced concrete pipe culverts	..	65
Total	..	415 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—110′ 0′ trough plate decking girder bridge.	,,	4,400	..	
		3—14′ 0″ } 8—12′ 0″ } arched masonry bridge. 138′ 0″	,,	5,520	..	
		2—8′ 3″ buckle plated masonry culvert.	,,	680	..	
2	3	Nil	..	..	..	
Carried over				10,600	3	

Howrah—Estimate No. 2—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward				10,600	3	
3	3	1—1′ 6″ arched masonry culvert.	No	No	3	1 3′ dia. R. C. pipe culvert.
		1—10′ 0″ do. ..	,,	400	..	
		1—4′ 0″ do. ..	,,	160	..	
4	3	1—4′ 0″ do. ..	,,	160	..	
		1—4′ 0″ do. ..	,,	160	..	
		2—12′ 6″ do. ..	,,	1,000	..	
5	3	1—1′ 6″ do. ..	,,	No	3	1 ditto.
		1—1′ 6″ do. ..	,,	,,	3	1 ditto.
		1—7′ 0″ do. ..	,,	280	..	
6	3	1—2′ 0″ do. ..	,,	No	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 3″ do. ..	,,	,,	3	1 ditto.
7	3	1—2′ 3″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
(7·45) 8	3	Nil ..	.. ..	..		
Total 6 miles excluding mileages having no bridges or culverts.				2,840 or	33 / 71	or 17·3 r. ft. per mile.
					104	
		Bridges of over 100 ft. in length		..	248	

Allowance of 25 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30′ = 7·45 (25′—17·3′) = 57·36 r. ft.

∴ R. C. pipe culverts = ¼ × 57·36 = 14·34, say	12	
Minor bridges of length up to 30′ = ¾ × 57·36 = 43·02′, say ..	50	
Total ..	414	r.ft.

Abstract of the above.

Constructing major bridges of length up to 300′ ..	248	
Constructing minor bridges of length up to 30 ft. ..	50	
Constructing reinforced concrete pipe culverts ..	45	
Reconditioning existing bridges and culverts ..	71	
Total ..	414	r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	See estimate on separate sheet ..	28,100	See estimate on separate sheet ..	28,100
	C. ft.		C. ft.	
Earthwork ..	5,280′ × 117 = 617,160 *Deduct* existing $5{,}280' \times \frac{22'+29'}{2}$ × 1·30′ = 175,032 442,128 At Rs. 5 per 1,000 c. ft. ..	2,211	5,280′ × 108 = 570,240 *Deduct* existing $5{,}280' \times \frac{21'+29'}{2}$ × 1·3′ = 171,600 398,640 At Rs. 5 per 1,000 c. ft. ..	1,993
Turfing ..	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	250	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	250
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 8 per 100 r. ft. ..	845	5,280′ × 2 = 10,560 r. ft. At Rs. 8 per 100 r. ft. ..	845
Carried over		31,406		30,188

Howrah—Estimate No. 2—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		31,406		30,188
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-8 per 100 s. ft. ..	6,072	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 20 per 100 c. ft. ..	3,520	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 20 per 100 c. ft. ..	5,632
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 40 per 100 c. ft. ..	6,160	....	..
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		53,272		39,594
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	5,327		3,959
	Total ..	58,599		43,553
	Say ..	58,600		43,600

NOTE.—Land width for the first two miles within Howrah town will be less than for the rest of the road. The estimate for the land, therefore, stands as shewn below.

Estimate for land.

	Rs.
1st mile—Width required = 50 feet, existing width = 35 feet. Additional land required = 5,280′ × (50′ − 35′) = 79,200 s. ft. = 5·5 bighas. At Rs. 24,000 per bigha	1,32,000
2nd mile—Width required = 60 feet, existing width = 44 feet. Additional land required = 5,280′ × (60′ − 44′) = 84,480 s. ft. = 5·87 bighas. At Rs. 10,000 per bigha	58,700
3 to 7·45 miles—Width required = 100 feet, average existing width = 38 feet. Additional land required = 5,280′ × 5·45 × 38′ = 1,093,488 s. ft. = say 76 bighas. At Rs. 250 per bigha	19,000
Total cost of land for 7·45 miles	2,09,700
∴ Average cost per mile	28,148
Say	28,100

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	7·45 miles.	58,600 per mile.	4,36,570	7·45 miles.	43,600 per mile.	3,24,820
Constructing major bridges of length from 110 ft. to 300 ft.	250 r. ft.	320 per r. ft.	80,000	248 r. ft.	320 per r. ft.	79,360
Constructing approaches to above ..	4 nos.	2,500 each.	10,000	4 nos.	2,500 each.	10,000
Constructing minor bridges of length up to 30 ft.	100 r. ft.	330 per r. ft.	33,000	50 r. ft.	330 per r. ft.	16,500
Constructing reinforced concrete pipe culverts	65 r. ft.	300 per r. ft.	19,500	45 r. ft.	300 per r. ft.	13,500
Reconditioning existing bridges and culverts	..	..	..	71 r. ft.	40 per r. ft.	2,840
Total ..			5,79,070			4,47,020
Say ..			6·0 lakhs.			4·5 lakhs.

ESTIMATE No. 3.

Road No. C—Sub-section 1—Domjur to Baigachi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	32 ·00	250	1 ·25	0 ·25	..	..	3	15 ·00	22 ·25	20	43 ·50
2	27 ·75	200	1 ·25	0 ·50	..	..	3	14 ·75	20 ·50	20	44 ·50
3	23 ·00	150	0 ·75	0 ·25	..	..	3	12 ·50	18 ·25	20	45 ·50
4	29 ·00	150	1 ·50	0 ·25	..	..	3	16 ·50	21 ·50	20	46 ·50
4 ·8	31 ·00	150	1 ·75	0 ·75	..	..	3	16 ·25	23 ·00	20	47 ·50
Total 4 ·8	142 ·75	900	6 ·50	..	..	..	15	75 ·00	105 ·50	100	227 ·50
Average	28 ·55	180	1 ·30	..	..	..	3	15	21 ·10	20	45 ·5
Say ..	28	190	..	..	..	..	..	..	21	..	46

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	5	0	Single brick soling 3″ ..	100 s.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6″ ..	100 s.ft.	11	0
Brick-on-end edging	100 r.ft.	7	0				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R.C. pipe culvert.
		1—11′ 9″ Saraswati river ..	,,	,,	15	Bridge.
		1—2′ 9″ arched masonry culvert.	,,	,,	3	1—3′ dia. R.C. pipe culvert.
		1—2′ 3″ do. ..	,,	,,	3	1 ditto.
		1′ 4′ 0 do. ..	,,	,,	6	2 ditto.
2	3	1—3′ 0″ do. ..	,,	,,	3	1 ditto.
		1—1′ 0′ pipe culvert ..	,,	,,	3	1 ditto.
		1—5′ 0″ arched masonry culvert.	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	3	1 ditto.
		1—3′ 0″ do. ..	,,	,,	3	1 ditto.
3	3	1—2′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 3″ do. ..	,,	,,	6	2 ditto.
4	3	1—4′ 0″ do. ..	,,	,,	6	2 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—8′ 0″ plank topped culvert.	,,	,,	15	Bridge.
		1—10′ 9″ plank topped bridge.	,,	,,	15	Ditto.
		1—3′ 0″ arched masonry culvert.	,,	,,	3	1—3′ dia. R. C. pipe culvert.
(4 ·8)5	3	1—3′ 9″ do. ..	,,	,,	6	2 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
		1—3′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
Total 4 ·8	..	80 ·5 r.ft. or 14 ·5 r.ft. per mile	..	..	117	or 24 ·4 r.ft. per mile.

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $=4 \cdot 8\times 30' - 117' = 27'$.

∴ R. C. pipe culverts $=\frac{1}{4}\times 27' = 6 \cdot 75'$, say	..	..	9
Minor bridges up to 30′ $=\frac{3}{4}\times 27' = 20 \cdot 25'$, say	..	..	20
	Total	..	146 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	65
Constructing reinforced concrete pipe culverts	..	81
Total	..	146 r.ft.

Howrah—Estimate No. 3—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R.C. pipe culvert.
		1—11′ 9″ Saraswati river	"	"	15	Bridge.
		1—2′ 9″ arched masonry culvert.	"	"	3	1—3′ dia. R.C. pipe culvert.
		1—2′ 3″ do. ..	"	"	3	1 ditto.
		1—4′ 0″ do. ..	"	"	6	2 ditto.
2	3	1—3′ 0″ do. ..	"	"	3	1 ditto.
		1—1′ 0″ pipe culvert ..	"	"	3	1 ditto.
		1—5′ 0′ arched masonry culvert.	"	"	6	2 ditto.
		1—3′ 0″ do. ..	"	"	3	1 ditto.
		1—3′ 0″ do. ..	"	"	3	1 ditto.
3	3	1—2′ 0″ do. ..	"	"	3	1 ditto.
		1—4′ 3″ do. ..	"	200	..	
4	3	1—4′ 0″ do. ..	"	No	6	2—3′ dia. R.C. pipe culvert.
		1—1′ 0″ pipe culvert ..	"	"	3	1 ditto.
		1—8′ 0″ plank topped culvert	"	"	15	Bridge.
		1—10′ 9″ plank topped bridge.	"	"	15	ditto.
		1—3′ 0″ arched masonry culvert.	"	"	3	1—3′ dia. R. C. pipe culvert.
(4·8) 5	3	1—3′ 9″ do. ..	"	"	6	2 ditto.
		1—1′ 0″ pipe culvert ..	"	"	3	1 ditto.
		1—1′ 0″ do. ..	"	"	3	1 ditto.
		1—3′ 0″ arched masonry culvert.	"	"	3	1 ditto.
		1—2′ 0″ do. ..	"	"	3	1 ditto.
Total 4·8	..	80·5′ or 14·5 r.ft. per mile	..	200	111	or 24·2 r.ft. per mile.
				or	5	
					116	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. $=(4\cdot8\times30')-116'=28'$.

∴ R. C. pipe culverts $=\frac{1}{4}\times28'=7'$, say	..	..	9
Minor bridges up to 30 ft. $=\frac{3}{4}\times28'=21'$, say	..	..	20
	Total	..	145 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	..	65
Constructing reinforced concrete pipe culverts	..	..	75
Reconditioning existing bridges and culverts	..	..	5
Total		..	145 r.ft.

Howrah—Estimate No. 3—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 100′ =	528,000		5,280′ × 100′ =	528,000	
	Deduct existing 5,280′ × 28′ =	147,840		*Deduct* existing 5,280′ × 28′ =	147,840	
		380,160			380,160	
	= 26·4 bighas at Rs. 190 per bigha ..	..	5,016	= 26·4 bighas at Rs. 190 per bigha ..	..	5,016
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117 =	617,760		5,280′ × 108 =	570,240	
	Deduct existing 5,280′ × $\frac{15'+21'}{2}$ × 1·3′ =	123,552		*Deduct* existing 5,280′ × $\frac{15'+21'}{2}$ × 1·3′ =	123,552	
		494,208			446,688	
	At Rs. 5 per 1,000 c.ft.	..	2,471	At Rs. 5 per 1,000 c.ft.	..	2,233
		S.ft.			S.ft.	
Turfing ..	5,280′ × 13·5′ =	71,280		5,280′ × 13·5′ =	71,280	
	At Rs. 3-8 per 1,000 s.ft.		250	At Rs. 3-8 per 1,000 s.ft.		250
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 7 per 100 r.ft.	..	739	At Rs. 7 per 100 r.ft.	..	739
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 20 per 100 c.ft.	..	3,520	At Rs. 20 per 100 c.ft.	..	5,632
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400		....		..
	At Rs. 46 per 100 c.ft.	..	7,084			
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft.	..	5,874			
Posts and pillars.	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			31,002			16,644
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,100			1,664
	Total	..	34,102			18,308
	Say	..	34,500			18,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	4·8 miles.	34,500 per mile.	1,65,600	4·8 miles.	18,500 per mile.	88,800
Constructing minor bridges of length up to 30 ft. ..	65 r.ft.	330 per r.ft.	21,450	65 r.ft.	330 per r.ft.	21,450
Constructing reinforced concrete pipe culverts ..	81 r.ft.	300 per r.ft.	24,300	75 r.ft.	300 per r.ft.	22,500
Reconditioning existing bridges and culverts ..	..	..	..	5 r.ft.	40 per r.ft.	200
Total ..			2,11,350			1,32,950
Say ..			2·25 lakhs.			1·5 lakhs.

ESTIMATE No. 4.

Road No. C—Sub-section 2—Domjur to Jujeswar.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
					Existing unmetalled road.						
1	15	300	1·00	0·25	..	..	3	8	12	20	41
2	13	300	0·75	0·25	..	..	3	8	10	20	42
3	12	150	0·50	..	0·50	0·40	3	6	8	20	43
4	12	200	1·00	0·50	..	..	3	7	10	20	44
5	14	150	1·00	0·50	..	..	3	7	12	20	45
6	15	150	1·00	..	..	..	3	8	13	20	46
7	12	150	0·75	..	0·50	0·30	3	8	11	20	47
Total 7	93	1,400	6	..	..	..	21	52	76	140	308
Average	13·28	200	0·85	..	..	..	3	7·42	10·85	20	44
Say ..	13	..	..	..	..	..	..	7	11	..	..
					Entirely new road.						
8	..	150	..	..	2·00	1·00	4	..	..	20	48
Total 1	..	150	..	..	..	..	4	..	..	20	48
Say ..	..	..	..	..	..	..	..	..	..	..	49

Prevailing average rate for—

			Rs.	a.			Rs.	a.
Earthwork ..	..	1,000 c. ft.	4	0	Single brick soling 3″ ..	100 s. ft.	6	0
Turfing ..	..	1,000 s. ft.	3	8	Double brick soling 6″ ..	100 s. ft.	11	0
Brick-on-end edging	..	100 r. ft.	7	0				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—1′ 6″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
2	3	1—4′ 0″ do. ..	„	„	3	1 ditto.
		1—4′ 0″ timber culvert ..	„	„	3	1 ditto.
		1—1′ 6″ pipe culvert ..	„	„	3	1 ditto.
3	3	1—3′ 0″ arched masonry culvert.	„	„	3	1 ditto.
		1—3′ 0″ do. ..	„	„	3	1 ditto.
		1—1′ 0″ pipe culvert ..	„	„	3	1 ditto.
4	3	1—14′ 0″ timber bridge ..	„	„	15	Bridge.
		1—1′ 0″ pipe culvert ..	„	„	3	1—3′ dia. R. C. pipe culvert.
5	3	1—1′ 6″ do. ..	„	„	3	1 ditto.
Carried over		34′ 6″	..	..	42	

Howrah—Estimate No. 4—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		34′ 6″	..	..	42	
6	3	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
7	3	1—2′ 0″ do. ..	,,	,,	3	1 ditto.
8	4	1—8′ 0″ unbridged drain	..	..	6	2 ditto.
		1—48′ 0″ unbridged channel	..	..	50	Bridge.
Total 8·0 miles.	..	93·50 r. ft. or 11·7 r. ft. per mile.	..	..	104	or 13 r. ft. per mile.

Allowance of 40 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30′ = 8 (40′ − 13′) = 216 r. ft.

∴ R. C. pipe culverts = ¼ × 216′ = 54′, say	.. ..	56
Minor bridges up to 30′ = ¾ × 216′ = 162′, say	.. ..	160
Total	..	320 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30′	.. ..	50
Constructing minor bridges of length up to 30′	.. ..	175
Constructing reinforced concrete pipe culverts	.. ..	95
Total	..	320 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing unmetalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
	S. ft.	Rs.	S. ft.	Rs.
Land ..	5,280′ × 99′ = 522,720 *Deduct* existing 5,280′ × 13′ = 68,640 454,080 = 31·5 bighas at Rs. 200 per bigha	6,300	5,280′ × 99′ = 522,720 *Deduct* existing 5,280′ × 13′ = 68,640 454,080 = 31·5 bighas at Rs. 200 per bigha	6,300
Earthwork ..	C. ft. 5,280′ × 117′ = 617,760 *Deduct* existing 5,280′ × (7′+11′)/2 × 0·85′ = 40,392 577,368 At Rs. 4 per 1,000 c. ft. ..	2,308	C. ft. 5,280′ × 108′ = 570,240 *Deduct* existing 5,280′ × (7′+11′)/2 × 0·85′ = 40,392 529,848 At Rs. 4 per 1,000 c. ft. ..	2,119
Turfing ..	5,280′ × 13·5′ = 68,640 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	240	5,280′ × 13·5′ = 68,640 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	240
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 7 per 100 r. ft. ..	739	5,280′ × 2 = 10,560 r. ft. At Rs. 7 per 100 r. ft. ..	739
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 20 per 100 c. ft. ..	3,520	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 20 per 100 c. ft. ..	5,632
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 44 per 100 c. ft. ..	6,776	....	..
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		31,805		17,804
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,180		1,780
	Total ..	34,985		19,584
	Say ..	35,000		20,000

Howrah—Estimate No. 4—*concld.*

(b) Entirely new road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280′×112′ = 591,360 s. ft. =41·0 bighas At Rs. 150 per bigha ..	6,150	5,280′×112′ = 591,360 s. ft. =41·0 bighas At Rs. 150 per bigha ..	6,150
Earthwork ..	5,280′×161 = 850,080 c. ft. At Rs. 4 per 1,000 c. ft. ..	3,400	5,280′×150 = 792,000 c. ft. At Rs. 4 per 1,000 c. ft.	3,168
Turfing ..	5,280′×18′ = 95,040 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	333	5,280′×18′ = 95,040 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	333
Edging ..	5,280′×2 = 10,560 r. ft. At Rs. 7 per 100 r. ft. ..	739	5,280′×2 = 10,560 r. ft. At Rs. 7 per 100 r. ft. ..	739
Soling ..	5,280′×10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′×8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280′×10′×4″= 17,600 c. ft. At Rs. 20 per 100 c. ft. ..	3,520	5,280′×8′×8″= 28,160 c. ft. At Rs. 20 per 100 c. ft.. ..	5,632
Stone metal ..	5,280′×10′×3½″= 15,400 c. ft. At Rs. 49 per 100 c. ft. ..	7,546	....	..
Wearing course ..	5,280′×10′ = 52,800 s.ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		33,610		18,796
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,361		1,880
	Total ..	36,971		20,676
	Say ..	37,000		21,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	1 mile	37,000 per mile.	37,000	1 mile	21,000 per mile.	21,000
Improving existing unmetalled road ..	7 miles	35,000 per mile.	2,45,000	7 miles	20,000 per mile.	1,40,000
Constructing minor bridges of length above 30 ft.	50 r. ft.	260 per r. ft.	13,000	50 r. ft.	260 per r. ft.	13,000
Constructing minor bridges of length up to 30 ft.	175 r. ft.	330 per r. ft.	57,750	175 r. ft.	330 per r. ft.	57,750
Constructing reinforced concrete pipe culverts	95 r. ft.	300 per r. ft.	28,500	95 r. ft.	300 per r. ft.	28,500
Total ..			3,81,250			2,60,250
Say ..			**4·0 lakhs.**			**2·75 lakhs.**

ESTIMATE No. 5.

Road No. F—Sub-section 3—Jujeswar to Maju.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.			Ft.	Mile.	Ft.			Rs.	Rs.
1	..	150	..	..	4	1	6	..	..	20	46
2	..	100	..	..	5	1	7	..	..	20	45
3	..	200	..	..	2	1	4	..	..	20	44
4	..	200	..	..	2	1	4	..	..	20	43
Total 4	..	650	..	..	..	..	21	..	..	80	178
Average ..	..	162·5	..	..	..	..	5·25	..	..	20	44·5
Say ..	..	160	..	..	..	..	6	..	..	..	45

Prevailing average rate for—

Item	Unit	Rs. a.	Item	Unit	Rs. a.
Earthwork ..	.. 1,000 c.ft.	4 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing ..	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 s.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	7 0			

Parts 2 (a) and 2 (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	6	1—50′ Rajapur channel (unbridged).	..	..	50	Bridge.
		1—4′ 0″ field drain (unbridged).	..	..	4	1—4′ dia. R. C. pipe culvert.
2	7	1—4′ 0″ do. ..	..	..	4	1 ditto.
		1—3′ 0″ do. ..	..	..	4	1 ditto.
3	4	1—2′ 0″ do. ..	..	..	4	1 ditto.
		1—50′ 0″ Kana Damodar (unbridged).	..	..	50	Bridge.
4	4	1—3′ 0″ drain (unbridged).	..	..	4	1—4′ dia. R. C. pipe culvert.
		1—2′ 0″ do. ..	..	..	4	1 ditto.
Total 4		118 r.ft. or 29·5 r.ft. per mile.	..	..	124	or 31⅜ r.ft. per mile.

Allowance of 50 r.ft per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 4 (50′ − 31′) = 76 r.ft.

∴ R. C. pipe culverts = ¼ × 76 = 19′, say	.. ..	21
Minor bridges up to 30′ = ¾ × 76 = 57′, say	.. ..	55
	Total ..	200 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30′	.. ..	100
Constructing minor bridges of length up to 30′	.. ..	55
Constructing reinforced concrete pipe culverts	.. ..	45
	Total ..	200 r.ft.

Howrah—Estimate No. 5—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Entirely new road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280′ × 135′ = 712,800 s.ft. = 49·5 bighas. At Rs. 160 per bigha ..	7,920	5,280′ × 135′ = 712,800 s.ft. = 49·5 bighas. At Rs. 160 per bigha ..	7,920
Earthwork ..	5,280′ × 262 = 1,383,360 c.ft. At Rs. 4 per 1,000 c.ft. ..	5,532	5,280′ × 247 = 1,304,160 c.ft. At Rs. 4 per 1,000 c.ft. ..	5,216
Turfing ..	5,280′ × 27′ = 142,560 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	499	5,280′ × 27′ = 142,560 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	499
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..	739	5,280′ × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..	739
Soling ..	5,280′ × 10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft. ..	5,808	5,280′ × 8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft. ..	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 20 per 100 c.ft. ..	3,520	5,280 × 8′ × 8″ = 28,160 c.ft. At Rs. 20 per 100 c.ft. ..	5,632
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 45 per 100 c.ft. ..	6,930	....	..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		37,062		22,780
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,706		2,278
	Total ..	40,768		25,058
	Say ..	41,000		25,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	4 miles.	41,000 per mile.	1,64,000	4 miles.	25,500 per mile.	1,02,000
Constructing minor bridges of length above 30 ft.	100 r.ft.	260 per r.ft.	26,000	100 r.ft.	260 per r.ft.	26,000
Constructing minor bridges of length up to 30 ft.	55 r.ft.	330 per r.ft.	18,150	55 r.ft.	330 per r.ft.	18,150
Constructing reinforced concrete pipe culverts.	45 r.ft.	300 per r.ft.	13,500	45 r.ft.	300 per r.ft.	13,500
Total ..			2,21,650			1,59,650
Say ..			2·25 lakhs.			1·75 lakhs.

ESTIMATE No. 6.

Road No. F—Sub-section 4—Maju to Debandi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
		Rs.			Ft.	Mile.	Ft.			Rs.	Rs.
1	..	75	..	..	6	1	8	..	..	20	43
2	..	75	..	..	6	1	8	..	..	20	44
Total 2	..	150	..	..	..	..	16	..	..	40	87
Average	..	75	..	..	..	..	8	..	..	20	43·5
Say	..	..	..	..	..	..	..	..	..	..	44

Analysis of rate of stone metal for 100 c.ft.—

		Rs.	a.
Cost of stone metal at quarry (Pakur)	..	5	8
Railway freight from Pakur to Maju	..	23	12
Unloading from wagon	..	1	0
Sundry charges	..	1	0
Carting up to 1st mile	..	3	8
Stacking at road side	..	0	8
Consolidation	..	6	0
Contractor's profit at 10 per cent. on Rs. 17-8	..	1	12
		43	0

Re. 1 is added for extra mileage of carting.

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3″	100 s.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6″	100 s.ft.	11	0
Brick-on-end edging	100 r.ft.	7	0				

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	8	1—50′ 0″ khal (unbridged)	..	..	50	Bridge.
		1—3′ 0″ field drain ..	..	..	4	1—4′ diameter R. C. pipe culvert.
2	8	1—4′ 0″ do. ..	..	..	4	1 ditto.
		1—4′ 0″ do. ..	..	..	4	1 ditto.
		1—14′ 0″ nullah (unbridged)	..	..	15	Bridge.
Total 2		75 r.ft. or 37·5 r.ft. per mile	..	..	77	or 38·5 r.ft. per mile.

Allowance of 50 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $=2\ (50'-38\cdot5')=23$ r.ft.

∴ R. C. pipe culverts $=\frac{1}{4}\times 23'=5\cdot75'$, say	.. ..	8
Minor bridges up to 30′ $=\frac{3}{4}\times 23'=17\cdot25'$, say	.. ..	15
Total	..	100 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30′	..	50
Constructing minor bridges of length up to 30′	..	30
Constructing reinforced concrete pipe culverts	..	20
Total	..	100 r.ft.

Howrah—Estimate No. 6—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Entirely new road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280' × 156' = 823,680 s.ft. = 57·2 bighas. At Rs. 75 per bigha	4,290	5,280' × 156' = 823,680 s.ft. = 57·2 bighas. At Rs. 75 per bigha	4,290
Earthwork ..	5,280' × 381' = 2,011,680 c.ft. At Rs. 4 per 1,000 c.ft. ..	8,048	5,280' × 361' = 1,906,080 c.ft. At Rs. 4 per 1,000 c.ft. ..	7,624
Turfing ..	5,280' × 36' = 190,080 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	665	5,280' × 36' = 190,080 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	665
Edging ..	5,280' × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..	739	5,280' × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..	739
Soling ..	5,280' × 10' = 52,800 s.ft. At Rs. 11 per 100 s.ft. ..	5,808	5,280' × 8' = 42,240 s.ft. At Rs. 6 per 100 s.ft. ..	2,534
Jhama metal ..	5,280' × 10' × 4" = 17,600 c.ft. At Rs. 20 per 100 c.ft. ..	3,520	5,280' × 8' × 8" = 28,160 c.ft. At Rs. 20 per 100 c.ft. ..	5,632
Stone metal ..	5,280' × 10' × 3½" = 15,400 c.ft. At Rs. 44 per 100 c.ft. ..	6,776	....	..
Wearing course	5,280' × 10' = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..	5,874	....	
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		35,960		21,724
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,596		2,172
	Total ..	39,556		23,896
	Say ..	39,500		24,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	2 miles.	39,500 per mile.	79,000	2 miles.	24,000 per mile.	48,000
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	30 r.ft.	330 per r.ft.	9,900	30 r.ft.	330 per r.ft.	9,900
Constructing reinforced concrete pipe culverts.	20 r.ft.	300 per r.ft.	6,000	20 r.ft.	300 per r.ft.	6,000
Total ..			1,07,900			76,900
Say ..			1·25 lakhs.			0·75 lakh.

ESTIMATE No. 7.

Road No. G—Sub-section 1—Amta to Debandi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	80	75	2·50	..	3·00	1·00	8	17	29	20	49
2	80	75	2·00	..	2·50	1·00	7	16	28	20	50
3	90	60	2·50	..	3·50	1·00	8	21	32	20	51
4	50	60	3·00	..	2·50	1·00	8	12	28	20	52
5	40	200	2·00	..	0·50	0·20	4	10	19	20	53
Total 5	340	470	12	..	..	..	35	76	136	100	255
Average	68	94	2·40	..	..	..	7	15·20.	25·20	20	51
Say ..	..	100	..	..	..	..	..	15	25	..	..

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	.. 1,000 c.ft.	4 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 s.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	7 0			

Parts (2) (a) and 2 (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	8	1—5′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
2	7	1—5′ 0″ do. ..	,,	,,	6	2 ditto.
		1—4′ 0″ do. ..	,,	,,	4	1—4′ ditto.
		1—12′ 0″ wooden bridge	,,	,,	15	Bridge.
3	8	1—6′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
4	8	1—5′ 0″ do. ..	,,	,,	6	2 ditto.
		1—5′ 0″ do. ..	,,	,,	6	2 ditto.
5	4	1—1′ 0″ dia. R. S. W. pipe	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
Total 5	..	44 r.ft. or 8·80 r.ft. per mile	..	..	55	or 11 r.ft. per mile.

Allowance of 40 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 5 (40′ − 11′) = 145 r.ft.

∴ R. C. pipe culverts = ¼ × 145′ = 36·25′, say	..	36
Minor bridges of length up to 30′ = ¾ × 145′ = 108·75, say	..	110
Total	..	201 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	125
Constructing reinforced concrete pipe culverts	..	76
Total	..	201 r.ft.

Howrah—Estimate No. 7—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 146′ =	770,880		5,280′ × 146′ =	770,880	
	Deduct existing 5,280′ × 68′ =	359,040		*Deduct* existing 5,280′ × 68′ =	359,040	
		411,840			411,840	
	= 28·6 bighas at Rs. 100 per bigha ..		2,860	= 28·6 bighas at Rs. 100 per bigha ..		2,860
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 319′ =	1,684,320		5,280′ × 302′ =	1,594,560	
	Deduct existing $5,280' \times \frac{15'+25'}{2} \times 2\cdot40 =$	253,440		*Deduct* existing $5,280' \times \frac{15'+25'}{2} \times 2\cdot40 =$	253,440	
		1,430,880			1,341,120	
	At Rs. 4 per 1,000 c.ft.		5,724	At Rs. 4 per 1,000 c.ft. ..		5,364
Turfing ..	5,280′ × 31·5′ = 166,320 s.ft. At Rs. 3-8 per 1,000 s.ft. ..		582	5,280′ × 31·5′ = 166,320 s.ft. At Rs. 3-8 per 1,000 s.ft. ..		582
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..		739	5,280′ × 2 = 10,560 r.ft. At Rs. 7 per 100 r.ft. ..		739
Soling ..	5,280′ × 10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft. ..		5,808	5,280′ × 8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft. ..		2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 20 per 100 c.ft. ..		3,520	5,280′ × 8′ × 8″ = 28,160 c.ft. At Rs. 20 per 100 c.ft. ..		5,632
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 51 per 100 c.ft. ..		7,854	....		..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			33,201			17,951
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,320			1,795
	Total ..		36,521			19,746
	Say ..		36,500			20,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quanity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road.	5 miles.	36,500 per mile.	1,82,500	5 miles.	20,000 per mile.	1,00,000
Constructing minor bridges of length up to 30 ft.	125 r.ft.	330 per r.ft.	41,250	125 r.ft.	330 per r.ft.	41,250
Constructing reinforced concrete pipe culverts.	76 r.ft.	300 per r.ft.	22,800	76 r.ft.	300 per r.ft.	22,800
Total ..			2,46,550			1,64,050
Say ..			2·50 lakhs.			1·75 lakhs.

ESTIMATE No. 8.

Road No. G—Sub-section 2—Sitapur to Debandi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	15	150	3	1	..	..	4	8	14	20	46
2	16	150	2	0·5	..	..	3	7	12	20	45
3	100	150	2	..	1·0	0·25	5	20	28	20	45
4	30	200	1	0·5	..	..	3	15	19	20	46
5	30	150	1·5	..	..	..	3	11	16	20	45
6	50	75	2	..	1·0	0·5	5	17	31	20	46
7	60	75	2·75	..	2·0	1·0	7	18	33	20	47
Total 7	301	950	14·3	..	..	..	30	96	153	140	320
Average ..	43	135·7	2·03	..	..	..	4·28	13·71	21·85	20	45·7
Say ..	..	140	2·0	..	..	..	5	13	22	..	46

Analysis of rate of stone metal for 100 c. ft.—

	Rs.	a.
Cost of stone at Pakur	5	8
Railway freight from Pakur to Jagatballavpur station	25	12
Unloading from wagon	1	0
Sundry charges	1	0
Carting up to 1st mile	3	8
Stacking at road side	0	8
Spreading and consolidating	6	0
Contractor's profit at 10 per cent. (on Rs. 17-8)	1	12
	45	0

Re. 1 is added for extra mileage of carting.

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c. ft.	4	0	Single brick soling 3″	100 s. ft.	6	0
Turfing ..	1,000 s. ft.	3	8	Double brick soling 6″	100 s. ft.	11	0
Brick-on-end edging ..	100 r. ft.	7	0				

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	4	1—3′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
2	3	1—1′ 0″ R. S. W. pipe culvert	,,	,,	3	1 ditto.
3	5	1—5′ 0″ wooden bridge ..	,,	,,	6	2 ditto.
		1—5′ 0″ do. ..	,,	,,	6	2 ditto.
4	3	1—5′ 0″ arched masonry culvert.	,,	,,	6	2 ditto.
5	3	1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
Carried over		21′ 0″	..	..	30	

Howrah—Estimate No. 8—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to reconditions and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		21′ 0″	..	..	30	
6	5	2—4′ 0″ arched masonry culvert.	No	No	9	3—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	,,	,,	3	1 ditto.
7	7	1—66′ 0″ wooden decked bridge.	,,	,,	70	Bridge.
		1—5′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1 5′ 0″ do. ..	,,	,,	6	2 ditto.
		3—16′ 0″ arched masonry and wooden decked bridge.	,,	,,	50	Bridge.
Total 7	..	156 r. ft. or 21·28 r. ft. per mile.	..	..	174	or 25 r. ft. per mile.

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. – 7 (30′ – 25′) = 35 r. ft.

∴ R. C. pipe culvert = ¼ × 35 = 8·7, say ..	..	9
Minor bridges up to 30 ft. = ¾ × 35 = 26·1, say ..	..	25
Total	..	208 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	120
Constructing minor bridges of length up to 30 ft.	..	25
Constructing reinforced concrete pipe culverts ..	..	63
Total	..	208 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
	S. ft.		S. ft.	
Land ..	5,280′ × 124′ = 654,720 *Deduct* existing 5,280′ × 43′ = 227,040 427,680 = 29·7 bighas at Rs. 140 per bigha	4,158	5,280′ × 124′ = 654,720 *Deduct* existing 5,280′ × 43′ = 227,040 427,680 = 29·7 bighas at Rs. 140 per bigha	4,158
	C. ft.		C. ft.	
Earthwork ..	5,280′ × 209′ = 1,103,520 *Deduct* existing $5{,}280' \times \frac{13'+22'}{2} \times 2'$ = 184,800 918,720 At Rs. 4 per 1,000 c. ft. ..	3,676	5,280′ × 196′ = 1,034,880 *Deduct* existing $5{,}280' \times \frac{13'+22'}{2} \times 2'$ = 184,800 850,080 At Rs. 4 per 1,000 c. ft. ..	3,400
Carried over ..		7,834		7,558

Howrah—Estimate No. 8—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		7,834		7,558
Turfing ..	5,280'×22·5'= 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	416	5,280'×22·5'= 118,800 s.ft. At Rs. 3-8 per 1,000 s. ft. ..	416
Edging ..	5,280'×2 = 10,560 r. ft. At. Rs. 7 per 100 r. ft. ..	739	5,280'×2 = 10,560 r. ft. At Rs. 7 per 100 r. ft. ..	739
Soling ..	5,280'×10' = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280'×8' = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280'×10'×4"= 17,600 c. ft. At Rs. 20 per 100 c. ft. ..	3,520	5,280'×8'×8" = 28,160 c. ft. At Rs. 20 per 100 c. ft. ..	5,632
Stone metal ..	5,280'×10'×3½"= 15,400 c. ft. At Rs. 46 per 100 c. ft. ..	7,084	....	..
Wearing course ..	5,280'×10' = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		31,515	..	17,119
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,151		1,711
	Total ..	34,666		18,830
	Say ..	35,000		19,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	7·0 miles.	35,000 per mile.	2,45,000	7·0 miles.	19,000 per mile.	1,33,000
Constructing minor bridges of length above 30 ft.	120 r. ft.	260 per r. ft.	31,200	120 r. ft.	260 per r. ft.	31,200
Constructing minor bridges of length up to 30 ft.	25 r.ft.	330 per r.ft.	8,250	25 r.ft.	330 per r.ft.	8,250
Constructing reinforced concrete pipe culverts.	63 r. ft.	300 per r. ft.	18,900	63 r. ft.	300 per r. ft.	18,900
Total ..			3,03,350			1,91,350
Say ..			**3·25 lakhs.**			**2·0 lakhs.**

ESTIMATE No. 9.

Road No. H—Sub-sections 1 and 2—Amta to Palaspai.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.		Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
		Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
	1	80	200	5	..	1	0·25	8	14	24	20	51
	2	50	175	4	..	1	0·50	7	12	20	20	52
	3	70	150	5	..	2	0·50	10	16	28	20	53
(Kankrol)	4	80	150	5	..	1	0·30	8	14	26	20	54
	5	100	150	10	3	..	..	10	20	60	20	55
	6	80	150	6	..	1	0·50	10	22	26	20	56
	7	60	200	4	..	1	0·25	7	13	24	20	57
	8	40	200	3	..	1	0·20	6	14	28	20	58
Total	8	550	1,375	42	..	..	..	66	115	236	160	436
Average		68·7	171·8	5·25	..	..	..	8·25	14·4	29·5	20	54·5
Say		68	175	..	..	..	..	9	14	30	..	55

Analysis of rate of stone metal for 100 c.ft.—

			Rs.	a.
Cost of stone metal at quarry (Pakur)	..	..	5	0
Railway freight from Pakur to Amta	..	..	29	12
Unloading from wagon at Amta	..	..	1	0
Sundry charges	..	..	1	0
Carting up to 1st mile	..	..	3	8
Stacking at road side	..	..	0	8
	..	..	40	12
Contractor's profit at 10 per cent.	..	..	4	1
Consolidation	..	..	6	0
			50	13
	Say	..	51	0

Re. 1 is added for each extra mileage of carting.

Prevailing average rate for—

			Rs.	a.				Rs.	a.
Earthwork	..	1,000 c.ft.	5	0	Single brick soling 3"	..	100 s.ft.	6	0
Turfing	..	1,000 s.ft.	3	8	Double brick soling 6"	..	100 s.ft.	11	0
Brick-on-end edging	..	100 r.ft.	7	0					

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3		4	5	6	7
	Ft.						
1	8	1—720′ 0″	Damodar river unbridged.	..	..	700	Bridge (excluded from total.
		1—30′ 0″	wooden bridge	No	No	30	Ditto.
2	7	1—23′ 0″	do. ..	"	"	25	Ditto.
		1—10′ 0″	do. ..	"	"	15	Ditto.
3	10	3—2′ 3″	pipe culvert ..	"	"	8	2—4′ dia. R. C. pipe culvert.
		1—20′ 0″	wooden bridge	"	"	20	Birdge.
		1—10′ 0″	do. ..	"	"	15	Ditto.
Carried over	..	99′ 9″		..	..	113	

Howrah—Estimate No. 9—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		99′ 9″			113	
4	8	1—28′ wooden bridge ..	No	No	30	Bridge.
		1—19′ 0″ do. ..	”	”	20	Ditto.
5	10	1—3′ 0″ sluice culvert ..	”	”	3	1—3′ dia. R. C. pipe culvert.
		1—27′ 0″ wooden bridge ..	”	”	30	Bridge.
6	10	1—29′ 0″ do. ..	”	”	30	Ditto.
7	7	1—19′ 0″ do. ..	”	”	20	Ditto.
		1—48′ 0″ do. ..	”	”	50	Ditto.
8	6	1—3′ 0″ arched masonry culvert.	”	”	4	1—4′ dia. R. C. pipe culvert.
Total 8	..	275·75 r.ft. or 34·48 r.ft. per mile			300	or 37·5 r.ft. per mile.
		Bridges of over 100 ft. in length		..	700	

Allowance of 55 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.		
Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. in length $=(55' \times 8)-300'=140'$.		
∴ R. C. pipe culverts $=\frac{1}{4}\times 140=35'$, say	.. ..	36
Minor bridges up to 30 ft. $=\frac{3}{4}\times 140=105$, say	.. ..	105
	Total ..	1,141 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft.	..	700
Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	340
Constructing reinforced concrete pipe culverts	..	51
	Total ..	1,141 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 167′ =	881,760		5,280′ × 167′ =	881,760	
	Deduct existing 5,280′ × 68′ =	359,040		*Deduct* existing 5,280′ × 68′ =	359,040	
		522,720			522,720	
	=36·3 bighas at Rs. 175 per bigha.		6,353	=36·3 bighas at Rs. 175 per bigha.		6,353
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 447′ =	2,360,160		5,280′ × 425′ =	2,244,000	
	Deduct existing $5{,}280' \times \frac{14'+30'}{2} \times 5{\cdot}25' =$	609,840		*Deduct* existing $5{,}280' \times \frac{14'+30'}{2} \times 5{\cdot}25' =$	609,840	
		1,750,320			1,634,160	
	At Rs. 5 per 1,000 c.ft.		8,752	At Rs. 5 per 1,000 c.ft.		8,171
Carried over			15,105			14,524

Howrah—Estimate No. 9—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		15,105		14,524
Turfing ..	5,280′×40·5′ = 213,840 s.ft. At Rs. 3-8 per 1,000 s.ft.	749	5,280′×40·5′ = 213,840 s.ft. At Rs. 3-8 per 1,000 s.ft.	749
Edging ..	5,280′×2 = 10,560 r.ft. At Rs. 7 per 100 r.ft.	739	5,280′×2 = 10,560 r.ft. At Rs. 7 per 100 r.ft.	739
Soling ..	5,280′×10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft.	5,808	5,280′×8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft.	2,534
Jhama metal ..	5,280′×10′×4″ = 17,600 c.ft. At Rs. 20 per 100 c.ft.	3,520	5,280′×8′×8″ = 28,160 c.ft. At Rs. 20 per 100 c.ft.	5,632
Stone metal ..	5,280′×10′×3½″ = 15,400 c.ft. At Rs. 55 per 100 c.ft.	8,470	....	..
Wearing course	5,280′×10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each	240	40 nos. at Rs. 6 each	240
		40,505		24,418
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	4,050		2,442
	Total ..	44,555		26,860
	Say ..	44,500		27,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road.	8·0 miles	44,500 per mile.	3,56,000	8·0 miles	27,000 per mile.	2,16,000
Constructing major bridges of length above 300 ft. (Damodar river).	700 r.ft.	545 per r.ft.	3,81,500	700 r.ft.	545 per r.ft.	3,81,500
Constructing approaches to above.	2 sets	6,000 each	12,000	2 sets	6,000 each	12,000
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	340 r.ft.	330 per r.ft.	1,12,200	340 r.ft.	330 per r.ft.	1,12,200
Constructing reinforced concrete pipe culverts.	51 r.ft.	300 per r.ft.	15,300	51 r.ft.	300 per r.ft.	15,300
Total ..			8,90,000			7,50,000
Say ..			**9·0 lakhs.**			**7·5 lakhs.**

Appendix XI

Howrah.

Copies of correspondence with the district authorities relating to (i) acceptance of district scheme, and (ii) order of priority for construction.

Copy of letter No. 3361-62 R. D., dated the 16th June 1937, from the Special Officer, Road Development Projects, Bengal, to the Collector of the district and Chairman of the District Board, Howrah (with extract of enclosures).

I have the honour to invite a reference to the discussion which took place at the meeting held at Howrah on the 21st May 1937, at which yourself, the Chairman of the District Board, the District Engineer and I were present. After some discussion a selection was made of those roads considered to be the most suitable for inclusion in the comprehensive scheme for road development in Bengal.

I attach a skeleton map of Western Bengal and a district map of Howrah on which the alignments of the selected roads in the Howrah district have been shown in red and green lines, the red lines indicating Provincial Trunk roads and green lines, roads of other classes, such as inter-district roads and district main and secondary roads. A list of the selected roads is also attached for reference and record.

It is now necessary to have the scheme approved by the District Board as a whole, and I request you to be so good as to have the scheme put up to and approved at the next meeting of the Board.

A formal intimation of the approval of the scheme both by yourself and by the District Board may kindly be sent to me as early as possible so as to enable me to include the proposals in my report on road development which is due for submission at an early date. The scheme may be considered item by item so that in case the scheme is not approved in its entirety, those items which are agreed to may be approved and the reasons for not accepting other items may please be stated.

In order to expedite the case, a copy of this letter is also being sent direct to the Chairman of the Board for necessary action.

It is requested that the roads, which have been selected as representing the items necessary to provide a complete road system for your district, be arranged in the order in which you consider they should be taken up for improvement. The order of priority may kindly be worked out in consultation with the District Board. It will strengthen the case to be presented to Government, in my report, if unanimous opinion can be obtained on this question. I hope you will agree that the construction of the Trunk roads should take precedence over that of other roads unless there are very strong reasons for advocating the construction of individual items of a lower class.

Memo. No. 3362 R.D., dated the 16th June 1937.

Copy, together with a skeleton map of the district and the list of roads, forwarded to the Chairman, District Board, Howrah, for information and for favour of necessary action. It is requested that the approval of the Board be communicated to the Collector at a very early date.

List of roads selected to provide an improved road system of the shortest length considered sufficient to efficiently serve the interests of the district and at the same time afford the most suitable connections with neighbouring districts and also with the rest of the province.

Reference on map.	Classification.	Location.		Sub-sections.
		From—	To—	
A ..	Inter-Provincial—Trunk.	Howrah ..	Bally ..	(1) Howrah to Bally.
B ..	Provincial—Trunk	Ditto ..	Baigachi (Hooghly district boundary).	1. Howrah to Baigachi.
C ..	District—Main ..	Baigachi on item B above.	" Z" on item K below.	1. Baigachi to Domjur. 2. Domjur to Chak Sonthy-Ayma. 3. Chak Sonthy-Ayma to Kulgachia. 4. Kulgachia to " Z."
D ..	Ditto ..	Howrah ..	Domjur on item C above.	1. Howrah to Sibpur. 2. Sibpur to Maurigram. 3. Maurigram to Domjur.
E ..	Ditto ..	Bipra Nawpara on item D above.	Wadpur on item C above.	1. Bipra Nawpara to Wadpur.
F ..	Ditto ..	Bauria on west bank of Hooghly.	Debandi on item G below.	1. Bauria to Panchla. 2. Panchla to Maju. 3. Maju to Debandi.
G ..	Ditto ..	Amta ..	Sitapur (Hooghly district boundary near Jagatballabhpur railway station.)	1. Amta to Debandi. 2. Debandi to Jagatballabpur.
H ..	Ditto ..	Ditto ..	Palaspai (Hooghly district boundary).	1. Amta to Kankrol. 2. Kankrol to Palaspai.
I ..	Ditto ..	Bagnan ..	Kankrol on item H above.	1. Bagnan Kalyanpur. 2. Kalyanpur to Kankrol.
J ..	Ditto ..	Uluberia ..	Raghudebpur on item F above.	1. Uluberia to Raghudebpur.
K ..	Ditto ..	Ditto ..	Kulian on item L below.	1. Uluberia to " Z." 2. " Z " to Kulian.
L ..	Ditto ..	Bagnan ..	Shyampur ..	1. Bagnan to Kulian. 2. Kulian to Sultanpur. 3. Sultanpur to Shyampur.
M ..	Ditto ..	Sultanpur on item L above.	Jhumjhumi on east bank of the Rupnarayan river opposite Tamluk in the Midnapore district.	1. Sultanpur to Jhumjhumi.

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(2) Copy of letter No. 3648 G., dated the 9th August 1937, from the Collector, Howrah district, to the Special Officer, Road Development Projects, Bengal.

With reference to your letter No. 3361 R.D. of 16th June 1937, I have the honour to refer you to letter No. 2850 G. of 5th August 1937, from the District Board, Howrah, to my address, a copy of which has been sent to you direct by the District Board, and to say that I agree with the opinion of the District Board as regards your proposals and the order in which the roads should be taken up. I understand, however, from our conversation on the 21st May that we are not irrevocably bound to take up the purely district roads in this order and that latitude will be allowed from time to time as funds are allotted so that those roads which in the circumstances existing at the time seem most urgent to the inhabitants of this district may be taken up.

2. As regards the request of the District Board that certain other roads shall be included in the scheme, I commend this to your sympathetic consideration. I agree with all the proposals for extra roads except the two which would mean two extra bridges over the Damodar. If, however, the District Board will be content with ferries at these points there is less objection, though as regards the road from Uluberia to Syampore I should be inclined to say that a road running north-west and south-east to the Hooghly in continuation of C—25 would be better than a long road running almost parallel with your proposed road. I am also doubtful about the proposed road from Howrah to Mohiary and from Andul to Kulai as this is too close to the railway.

These additional proposals have not been framed in consultation with me, but I do not wish to hold up the main question by examining them in detail in consultation with the District Board especially as, for all I know, it may not be possible for you to include any more roads.

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(3) Copy of memorandum No. 2851 G., dated the 5th August 1937, from the Chairman of the District Board, to the Special Officer, Road Development Projects, Bengal, forwarding a copy of his letter No. 2850 G., dated the 5th August 1937, addressed to the Collector (with extract of enclosure).

Copy together with a copy of the District Board resolution referred to in the letter and a copy of the skeleton map showing the alignment of the additional roads proposed for inclusion in the scheme is forwarded to the Special Officer, Road Development Projects, Bengal, in continuation of this office letter No. 2685, dated the 27th July 1937.

M. N. ROY,

Chairman.

Copy of letter No. 2850 G., dated the 5th August 1937, from the Chairman, District Board, Howrah, to the District Magistrate of the district.

I have the honour to invite a reference to your letter No. 3078 G., dated the 30th June last, and subsequent correspondence resting with this office memorandum No. 2687 G., dated the 27th July 1937, regarding the scheme of roads proposed in this district by the Special Officer, Road Development Projects, Bengal, in his letter No. 3361 R.D., dated the 16th June 1937, to your address and to inform you that the subject was considered by the Board at its Special Meeting held on the 31st July 1937, and it has unanimously approved the scheme framed by the Special Officer, Road Development Projects, Bengal, in its entirety. In addition to the roads included in the scheme framed by the Special Officer, the Board also recommended ten more roads for inclusion in the said scheme and for incorporation in the comprehensive scheme of road development projects in Bengal with a view to provide a complete road system throughout the district. A list with a description of these ten proposed additional roads together with a skeleton map showing their alignments is enclosed herewith for your information and necessary action.

A copy of the resolution of the Board on this subject is also enclosed herewith for your information.

A copy of this letter together with copies of enclosures has been forwarded separately to the Special Officer, Road Development Projects, Bengal.

List of additional roads recommended by the Board for inclusion in the scheme of roads prepared by the Special Officer, Road Development Projects, Bengal, for the district of Howrah.

Reference on map.	Classification.	Location. From—	Location. To—	Sub-sections.
N ..	District—Main ..	Dehibhuirsuit (district boundary.)	On Hat Khoriop ..	Champadanga to Dehibhuirsuit in the Hooghly district and thence to Khoriop.
O ..	Ditto ..	Manasri ..	On route G at Munshirhat.	Khanakul to Manasri in the Hooghly district from Manasri to Penro thence through District Board road to No. 25.
P ..	Ditto ..	Amta on route G ..	On route C at Paikhala.	Amta to Paikhala.
Q ..	Ditto ..	Uluberia at the junction of routes K and J.	Shibpur ..	Uluberia to Shibpur.
R ..	Ditto ..	Makarda on Howrah-Amta Light Railway.	Kulai on route F ..	Makarda to Mohiary *via* District Board road No. 8 and Mohiary to Kulai *via* District Board roads Nos. 14 and 5.
S ..	Ditto ..	Howrah ..	Mohiary on route D	Santragachi to Mohiary.
T ..	Ditto ..	Andul ..	Rajganj ..	Andul to Rajganj.
U ..	Ditto ..	Bipranapara on route D.	Makarda on Howrah-Amta Light Railway.	Makarda to Begri.
V ..	Ditto ..	Jagadishpur on route B.	Bally on route A ..	Bally to Jagadishpur.
W ..	Ditto ..	Ichanagori on route G.	Domjur on route C	Ichanagori to Domjur.

Extract from the minutes of the proceedings of a Special Meeting of the Howrah District Board held on the 31st July 1937.

2. The letter No. 3361 R.D., dated the 16th June, 1937, from the Special Officer, Road Development Projects, Bengal, to the address of the Collector of Howrah, a copy of which was forwarded to the Chairman of the District Board for necessary action regarding the scheme for development of roads in the district of Howrah, was considered.

The Chairman read out the letter of the Special Officer to the address of the Collector, Howrah, and pointed out that conference was held at the Collector's bunglow on 21st May 1937 at which the Special Officer, the Collector, the District Engineer and himself were present. At that conference a general discussion was made regarding the road problem in this district, and the Special Officer forwarded thereafter with the aforesaid letter a comprehensive scheme for development of roads in this district containing thirteen projects together with a skeleton map showing the alignments of the selected roads. The Board was asked to examine the scheme and forward its opinion through the Collector of the district with a view to enable the Special Officer, Road Development Projects, Bengal, to include the proposals in his report on road development to the local Government. In the said letter it was also suggested that in case the Board did not agree to any particular project the reason therefor should also be stated by it. The Board should also consider the order of priority in which the roads should be taken up for improvement. A copy of the aforesaid letter together with a copy of the skeleton map and a copy of the statement showing the roads proposed was also forwarded to each member of the Board for information. The Chairman also pointed out that no selection was made at the aforesaid conference at the Collector's bunglow.

After a general discussion it was unanimously decided that the scheme of roads as proposed in this district, by the Special Officer for inclusion in the comprehensive scheme for road development in Bengal should be approved by the Board in its entirety, but in view of the fact that in the scheme prepared by the Special Officer no road was proposed in certain important localities of the district, and with a view to provide a complete road system throughout the district the following ten roads which were considered to be important and necessary should also be recommended for inclusion in the said scheme:—

(1) Dehibhuirsuit to Khoriop.

(2) Manasri to Munshirhat.

(3) Amta to Paikhala.

(4) Uluberia to Shibpur.

(5) Makardah to Kulai.

(6) Howrah to Mohiary.

(7) Andul to Rajgunj.

(8) Bipronapara to Makardah.

(9) Jagadishpur to Bally.

(10) Ichanagori to Domjur.

Resolution No. 877.

That the scheme of roads forwarded by the Special Officer, Road Development Projects, Bengal, with his letter No. 3361 R.D., dated the 16th June 1937, to the address of the Collector, Howrah, be approved in its entirety, and that ten more roads, the names of which have been noted above and the alignments and importance of which have been shown in the enclosed statement, be also recommended to the Special Officer for inclusion in the scheme of roads prepared by him for this district and for incorporation of the same in the comprehensive scheme for road development in Bengal.

Resolved further that the roads including the additional roads recommended by the Board be taken up in the order of priority noted below:—

	Name of roads.	Classification.	Reference on map.
1.	Howrah-Bally	Inter-Provincial —Trunk ..	A
2.	Howrah-Baigachi	Ditto	B
3.	Baluhati-Z on route K in the skeleton map.	District —Main	C
4.	Amta-Paikhala	Ditto	P
5.	Bagnan-Shyampur	Ditto	L
6.	Howrah-Domjur	Ditto	D
7.	Amta-Palaspai	Ditto	H
8.	Bipronapara-Wadpur	Ditto	E
9.	Bauria-Debandi	Ditto	F
10.	Amta-Sitapur	Ditto	G
11.	Bagnan-Kankrol	Ditto	I
12.	Uluberia-Raghudebpur	Ditto	J
13.	Uluberia-Kulian	Ditto	K
14.	Sultanpur-Jhumjhumi	Ditto	M
15.	Dehibhuirsuit-Khoriop	Ditto	N
16.	Manasri-Munshirhat	Ditto	O
17.	Uluberia-Shibpur	Ditto	Q
18.	Makardah-Kulai	Ditto	R
19.	Howrah-Mohiary	Ditto	S
20.	Andul-Rajganj	Ditto	T
21.	Bipronapara-Makardah	Ditto	U
22.	Jagadishpur-Bally	Ditto	V
23.	Ichanagori-Domjur	Ditto	W

Resolved further that the rough estimates for all these above-noted roads be prepared by the District Engineer at an early date for submission to the Special Officer, Road Development Projects, Bengal, as desired by him, and that the Chairman be authorised to appoint a suitable man having requisite engineering qualification for a period of one month at present for the purpose of preparation of the estimates for the aforesaid roads.

True copy.

Illegible,

Head Clerk, District Board, Howrah.

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(4) Copy of letter Nos. 3640-41 R.D., dated the 8th September 1937, from the Special Officer, Road Development Projects, to the Collector of the district and Chairman of the District Board.

With reference to your letter No. 3648 G., dated the 9th August 1937, in connection with the above, I have the honour to note that you agree with the opinion of the District Board expressed in their resolution No. 877 in which they approve of the proposed road scheme in its entirety. I agree with you that so far as the district roads are concerned, latitude ought to be allowed to change the order now given, so that should circumstances have changed by the time actual construction taken in hand, the question of urgency can be reconsidered.

2. It is noted that the District Board have resolved that ten new items should be added to those forming the road scheme. While offering no criticism at this stage of the additional items put forward, I should like to point out that the system proposed by me (without including these additional roads) already provides for one mile of improved road in respect of 4·08 square miles of the area covered by the district, which is greater than that provided in most other districts in the province. Similar figures, for the districts in the Burdwan Division, are 1 mile of road for 4·69 square miles in the Hooghly district, 5·72 square miles in the Birbhum district, 6·68 square miles in the Burdwan district, 7·07 square miles in the Bankura district and 8·86 square miles in the Midnapore district. This will indicate that your district has already been given a very fair share of roads. As Government are pressing for the early termination of the road investigation and submission of the final report, it is not possible at this stage to investigate the additional items proposed by the District Board, but mention will be made in my report of these additional items, so that your views and those of the District Board in this respect can be considered by Government after issue of the final report.

Memo. No. 3641 R.D., dated the 8th September, 1937.

Copy forwarded to the Chairman of the District Board, Howrah, for information, with reference to his memorandum No. 2851 G., dated the 5th August 1937.

(5) Copy of letter No. 3795 G., dated the 18th September 1937, from the Chairman of the District Board, to the Special Officer, Road Development Projects, Bengal

With reference to your memorandum No. 3641 R.D., dated the 8th September 1937, forwarding a copy of your letter No. 3640 R.D., of even date, to the address of the Collector of Howrah, regarding the complete system of trunk and subsidiary roads in this district, I have the honour to state that this Board accepted the scheme forwarded by you in its entirety on the assumption that due consideration would be made about the additional proposals made by this Board. If the detailed investigation reported and other necessary data are not forwarded by you to Government in respect of the additional proposals made by this Board on the ground that a larger proportion of roads has been allotted to this district as compared to the proportion in the other district in this division, the Board should be given an opportunity to reconsider the matter with a view to determine what roads should be recommended by it within the limit of proportion of roads allowed by you in respect of this district.

A temporary Overseer of your department was appointed by this Board to prepare the required data in respect of the roads suggested by you and also of those additional roads which the Board recommended for inclusion in the scheme. Necessary data have been collected in the meantime in respect of most of the roads suggested by you and those for the remaining ones including the additional projects will also be prepared by him soon. It is expected that a comprehensive report dealing with the importance of each additional road together with the requisite data in respect thereof will be ready for submission to you by the middle of October next.

So instead of simply mentioning these additional roads in your report, those roads may also be considered and recommended by you and the report together with the data in respect of the additional roads may also be forwarded by you to Government.

If this is not considered feasible, the Board should be given an opportunity to reconsider the matter with a view to determine which roads within the prescribed limit (viz., 1 mile of road for 4·03 square miles of area) should be recommended by it for this district for inclusion in the road development programme.

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(6) Copy of letter No. 3689 R.D., dated the 25th September 1937, from the Special Officer, Road Development Projects, Bengal, to the Chairman, District Board, Howrah.

With reference to your letter No. 3795 G., dated the 18th September 1937, in connection with the above, I have the honour to note that as now pointed out by you, the previous acceptance by the District Board of the comprehensive road scheme formulated by me and forwarded through the Collector with my No. 3361 R.D., dated the 16th June 1937, as intimated to you in my memorandum No. 3362 R.D., of the same date, is to be considered, conditional on the provision of the ten extra roads which the Boards recommended for inclusion in the scheme.

I also note that you are having investigations made for these ten roads as well as those already proposed by me and that I am to expect by the middle of October next a complete report on the whole scheme.

The present position is that as my report has to be sumbitted not later than the end of October next, all further examination of proposal for additional roads has had to be stopped, so as to permit of the whole of the energy of myself and my staff being employed in the writing up of the report. It will not therefore be possible for me to personally examine the new proposals in sufficient detail to make out a revised scheme which will entirely supersede the scheme already framed. If however, a scheme of this nature can be prepared by your District Engineer, in consultation with yourself and the Collector, I shall be very pleased to incorporate the same in my report with such remarks as I can offer in the absence of the detailed personal examination of the same.

In this connection I would suggest that possibly the best solution of the problem would be for yourself and your District Engineer to meet me at my office, 6, Government Place, North (Top floor), Calcutta, so that we can have a preliminary discussion on the subject and may perhaps thereby be able to introduce suitable modifications in the scheme which while satisfying the needs of the district from your point of view, will at the same time be unobjectionable from my point of view in which the question of avoiding road rail competition will be the main factor. I suggest that you fix up a date for the meeting over the phone, my phone No. being Regent 740.

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(7) Copy of letter No. 4167 G., dated the 6th October 1937, from the Chairman, District Board, to the Special Officer, Road Development Projects, Bengal.

With reference to your letter No. 3689 R.D., dated the 25th September 1937, regarding the comprehensive road scheme in the Howrah district, I have the honour to request that the proposal made by this Board for additional roads in this district may very kindly be examined. The District Board and myself have very carefully considered the question of communication throughout the area of this district and the additional roads proposed by this Board for inclusion within the road development scheme were found to be in the best interests of this district.

Myself and the District Board have again considered the matter and we have earnestly to request you that in examining the additional schemes, preference be given to the following roads in the order mentioned below :—

(1) Dehibhuirsuit to Khoriop.

(2) Amta to Paikhala.

(3) Jagadishpur to Bally.

(4) Uluberia to Shibpur.

These roads are extremely important for the purpose of communication in this district.

I may add that Mr. Symons, the District Magistrate, is now on leave. I do not know whether it will be necessary for me to come to your office. The District Engineer will see you to-morrow. I shall leave town for a change on the 8th instant after evening and I shall not be back before the 5th of November 1937. I shall, however, come back for a day or two on the 27th October 1937.

The complete report with regard to the roads in your scheme and the additional roads proposed by this Board (the major portion of which report has already been despatched to you) will be furnished to you by the middle of this month as already promised by me.

CHAPTER XIV.

Midnapore.

I—Situation, boundaries, area, population and administration.

Midnapore, the third largest district in the province, is the southernmost district of the Burdwan Division. It is situated between 21° 36′ and 22° 57′ north latitude, and between 86° 33′ and 88° 11′ east longitude. It is bounded on the north by the district of Bankura; on the east by the river Hooghly and its tributary, the Rupnarayan, which separates the district from the 24-Parganas, Howrah and Hooghly; on the south by the coast line of the Bay of Bengal. On the west the boundary marches with the Balasore district and the Mayurbhanj State in Orissa, and with the Singhbhum and Manbhum districts of Chota Nagpur. Its extreme length from north-west to south-east is 115 miles, and its extreme width from north-east to south-west is 75 miles.

The area of the district is 5,245 square miles, and its population, according to the latest census returns, is 2,799,093, showing a density of 534 per square mile.

The headquarters of the district is at Midnapore, situted on the northern bank of the Cossye river. Midnapore, with a population of 32,021, is also the chief town of the district in respect of commercial importance, but Kharagpur, at which the main workshops of the Bengal-Nagpur Railway are located, has a larger population (58,134).

The district is divided for administrative purposes into 5 subdivisions and 33 thanas, the names, areas and population of which are shown in Appendix I to this chapter.

The district is in charge of a Collector, who administers it with the help of the usual complement of officers and staff. This officer is also the District Magistrate. A portion of the administration relating to Local Education, Public Health, Buildings and Communications is under the control of a District Board, under which body there are five Local Boards, one in each subdivision. There are also seven municipalities in the district managing the affairs of the municipal areas.

II—Physical features.

In shape the district resembles a rectangle resting on a base formed by the Hooghly estuary and the Bay of Bengal on the south-east, with the rivers Darakeswar and Rupnarayan more or less outlining an adjacent side on the north-east.

Owing to its geographical position Midnapore is one of the most varied, as regards physical aspects, of the districts of Bengal. In the north and north-west the country forms a part of the eastern fringe of the Chota Nagpur plateau, and consists of a hard laterite formation. In the east and south-east lies an alluvial plain formed by deposits carried down by rivers forming a part of the great Gangetic system of Upper India. This portion has characteristics very similar to those of the districts of lower Bengal. The south and south-west forms a maritime tract, subject to tidal waves and to the inroads of the sea, with characteristics similar to those of Orissa.

The general appearance of the district is that of a large open and well-cultivated plain, but towards the north and west gentle undulations appear with ridges covered by a thick growth of dwarf sal trees and other scrub

jungle, while in the extreme north-west there are several hills over 1,000 feet in height. The remainder of the country is an almost level plain, broken only by the sandhills which line the sea coast and stretch for some miles inland.

Broadly speaking, two natural divisions with very distinct characteristics may be recognised, the Bengal-Nagpur Railway, running north and south from Midnapore, generally forming the dividing line between them. To the east of this line the soil is purely alluvial, the country is flat, and the land is fertile and fully cultivated. To the west the country is undulating, with a surface of alternating ridges and depressions, and consists of long rolling waves of laterite rock, forming the termination of the highlands of Central India. The soil on the ridges is poor and not generally cultivated, but in the intervening depressions the soil, which is composed of the richer and finer particles washed down from the slopes above, is fertile and produces rich crops of rice.

The alluvial portion may again be subdivided into three divisions. The first is a lowlying strip of purely deltaic country bordering the Rupnarayan and the Hooghly, and extending for about 20 miles inland from these rivers. This tract is intersected by numerous rivers and interconnected watercourses, which are subject to tidal influence, and has a character similar to the neighbouring districts of Hooghly, Howrah and the 24-Parganas. Beyond the inner edge of this strip the character of the surface changes, in that while still being an alluvial deposit with no signs on the surface of the laterite formation below, the tidal influence diminishes, the watersheds of the streams become more marked, and the general elevation of the country is higher.

The second division consists of the littoral tract which lies at the head of the Bay of Bengal, and is exposed to the full force of the south winds which are prevalent during several months of the year. Most of the tract is open to the incursions of the sea, and has to be protected by a long embankment. Much of the soil in this area is saline. A remarkable feature is the presence of a range of sandhills, about 60 feet in height, extending along the coast line at an average distance of 6 miles from it, between the Rasulpur river on the east and the Subarnarekha on the west. It is probable that this range was at one time the coast line; and a similar formation appears to be now going on along the present coast line, where a sand ridge is gradually being raised by the action of the strong south wind during the hot months of the year. Generally the tract between the sandhills and the sea has a sandy soil, on which cocoanuts, betel-palms and melons flourish.

The third division consists of the alluvial tract constituting the remainder of the eastern half of the district. This is a monotonous rice plain intersected by numerous waterways and tidal creeks, which are lined with embankments to protect the fields from flood water. Much of the area is water-logged, and this is particularly the case with the portion lying between the Selai and the Cossye rivers, which is a lowlying depression formed by the combined deltas of these rivers and intersected by numerous khals. The river beds having risen above the level of the adjoining land, the latter has to be protected from inundation by a complicated system of embankments, many of which unfortunately obstruct the natural drainage of the country and cause water-logging.

III—River system and marshes.

The general direction of flow of the rivers in the district is from the highland on the north-west, towards the rivers Rupnarayan and Hooghly in the south-east. The largest streams which traverse the district enter it either from the Bankura district or from the district of Singbhum in Bihar, and flow across the western elevated area in fairly well-defined channels and with rapid currents. As these streams progress eastwards through the flat and lowlying alluvial area forming the eastern part of

the district, they lose their velocities, begin to wind in tortuous courses, and to inundate the surrounding country. In their lower reaches these rivers are tidal and have raised their beds to such an extent that their waters have to be confined by embankments to keep them from spreading over the country. The district is also intersected by a large number of small streams which rise within the district itself and form tributaries to the main rivers. These have features depending more or less upon the nature of the country traversed.

The principal rivers are—

(1) Hooghly.	(5) Subarnarekha.
(2) Rupnarayan.	(6) Haldi.
(3) Selai.	(7) Kaliaghai.
(4) Cossye.	(8) Rasulpur.

A description of these rivers will be found in Appendix I to Chapter II, in which the characteristics of the more important rivers in the province have been briefly described.

The elevated undulating area forming the western half of the district contains no marshes to speak of, but in the eastern portion of the district larger areas of the country are covered by water during the rains, and form expansive rice swamps. After the rains are over and the level of the rivers falls, the greater portion of the water drains off, leaving inundated patches covering the lowest lying depressions dotted over the country. Many of these dry up during the hot months, but some retain water throughout the year. The most extensive of these depressions is that formed by a water-logged tract in the north-east of the district, bounded by the Selai river on the north and the Cossye on the south.

IV—Climate and rainfall.

The climate of the southern and eastern portions of the district differs from that of the northern and western. In the latter it is very similar to that of Bankura, being much hotter and drier than in the former, the climate of which resembles that of the 24-Parganas. In both tracts the monsoon generally sets in by the middle of June and continues up to the middle of September. During this period the temparature and humidity are somewhat less than that during the summer months, when the heat is great, characterised, especially in the northern and western parts, by low humidity. The cold weather is short, but has a pleasant and bracing climate while it lasts.

The average annual temperature is 80·1°. The mean temperature in December is 67·4° and in April 88·2°. The average daily variation is limited within a range of 19·2°.

The normal annual rainfall in 60·1 inches, of which only about 5·35 inches fall during the months of November to April.

V.—Floods and inundations.

The western half of the district being well raised is not subject to extensive inundation by flood; the land adjoining the rivers Subarnarekha, Cossye and Selai is submerged to a varying extent during very high floods, but only for short periods. In the eastern half of the district, where the country flattens and the rivers begin to lose their velocity, large areas are subject to inundation; in the north the thanas of Chandrakona, Ghatal, Kespur and Daspur, and in the south the thanas of Pingla, Sabang, Narayangarh, Pataspur and Contai are the areas most affected.

The extent to which the district is subject to inundation is indicated on a sketch map (Plate XI), areas usually inundated at intervals of from one to three years, those inundated at intervals of about five years, and those subject to occasional inundation being shown in different colours.

VI—Soils, crops and irrigation.

Three types of soil are found in the alluvial tract, viz., *entel*, a clayey soil, *doash*, a loamy soil, and *beledoash*, a sandy loam. In the laterite tract the soils are mostly loam and sandy loam, being reddish-brown in colour and generally less fertile than the corresponding types in the alluvial tract.

Aman or winter rice is the staple crop of the district. Other crops grown are autumn and summer rice, sugarcane, Indian-corn, cereals and pulses, jute, til, wheat, rape, mustard and other oilseeds and tobacco.

Artificial irrigation is extensively used in the district. The canal system is represented by the Midnapore High Level Canal, which takes off from the Cossye river above the anicut across this stream just below the town of Midnapore, and runs eastwards to Uluberia on the river Hooghly in the Howrah district, crossing the rivers Rupnarayan and Damodar on its way. Only the upper portion of this canal, extending from the head-works down to the west bank of the river Rupnarayan, is used as an irrigation canal, the rest of the length being used solely for navigation. The area irrigated by this system is about 190 square miles of country. The other system of irrigation found in the district is the tank system by which the fields are irrigated from small storage reservoirs or tanks in which water is collected during the rains. Two types of irrigation tanks are found, the first, in the eastern deltaic area, being low level tanks excavated below the surface of the ground, and the second, in the western elevated undulating area, being high level reservoirs formed by throwing embankments across the drainage slopes and depressions of the country, so as to pond up rain water. In the case of the low level tanks the water has to be raised by hand into elevated channels before it can be led on to the fields.

VII—Industries, hats and melas.

The chief industrial centre in the district is at Kharagpur, where the extensive workshops of the Bengal-Nagpur Railway are located. These works, which include seven different branches of railway engineering, cover an area of no less than 77 acres, and are surrounded by a populous town and the usual markets, shops and bazars which have sprung into existence to meet the needs of the residents, most of whom are railway employees. In addition to the railway works three other factories are to be found, viz., Messrs. W. and T. Avery's workshop, a tanning extract factory, and a rice-mill.

The rest of the district is mainly agricultural, the only factory industry being rice-milling. There are 41 rice-mills in this area, of which 9 are at Kolaghat, 6 at Ballichak, 5 at Salboni, 4 each at Madpur and Midnapore, 3 at Manikpara, 2 each at Sagarbarh and Bansdapalasi, and 1 each at Panskura, Jhargram, Belda, Etamogra, Gidni and Chandrakona Road Station.

Of the non-factory industries, silk and tusser-weaving, cotton-weaving, mat-making, and the manufacture of brass and bellmetal wares are the most important. Other industries are the manufacture of molasses and earthen pots and salt manufacture, the latter being a Government monopoly.

Only 2·2 per cent. of the total population is solely engaged in industries.

As is the case in all districts of the province, the sale of local produce and the purchase of every-day necessities take place at rural markets called "hats", the duration of which is limited to a day or less, and at more pretentious fairs called "melas", which may extend into several days or even weeks. Hats, which are usually held weekly, but may in the more thickly populated areas be held bi-weekly or even daily, vary greatly in size, the

attendance ranging from a modest gathering of 50 or so to as much as several thousands. Melas are periodic gatherings usually taking place annually, although in some cases two or three melas may be held during the year at the same place. Excluding those of minor importance there are 374 hats and 144 melas in the district. The particulars of these are given in Appendix II to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate XI), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

VIII—Waterways, steamer services and ferries.

The rivers Hooghly and Rupnarayan, which flow along the eastern boundary of the district, are important in so far as the waterways intersecting the district itself find an outlet into these rivers, which in themselves are navigable all the year round by boats and river steamers.

There are three navigable canals in the district, namely, the Midnapore High Level Canal, the Hijli Tidal Canal, and the Orissa Coast Canal. The Midnapore Canal runs from opposite Midnapore on the Cossye river to Dainan on the Rupnarayan, a distance of 36 miles. The Hijli Tidal Canal and the Orissa Coast Canal run in a continuous line, connecting the Hooghly and the Subarnarekha rivers. Both these canals are navigable and provide boat traffic between Calcutta and Orissa. Traffic on all these canals has decreased since the opening of the railway along the east coast.

Of the other waterways the Selai is navigable throughout the year for a short distance in its lower reaches, which are within tidal influence; the Haldi is navigable throughout the year, but is difficult at low tides owing to sandbars. It is moreover a treacherous river subject to tidal bores, and at all times noted for its swift strong current. The Cossye is navigable in the rains by large boats from its mouth to Panskura, but in the dry weather boats can only ply for a few miles above its confluence with the Haldi. The river Rasulpur, which has several feeders, also furnishes a large area with water communication in the interior.

There is a daily steamer service from Calcutta via Geonkhali and Tamluk to Kola (where the railway crosses the Rupnarayan). A thrice daily service is run between Kolaghat and Ghatal, but this is only possible when there is a sufficient depth of water above Ranichak. These services are maintained by the Calcutta Steam Navigation Company. Country boats ply in the Bay of Bengal, the Hooghly, and other tidal rivers of the district.

Excluding minor private ferries there are altogether 26 recognised public ferries in the district, all controlled by the District Board. Particulars of the more important of these are given in Appendix III to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate XI), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

IX—Railways.

Railway communication within the district is provided by four sections of railway with a total length of about 156.5 miles. The location of these railways is shown on the skeleton sketch map of the district (Plate XI), and a few of the more important particulars relating to them are given in Appendix IV to this chapter. As will be seen from the map, the district is quartered by its railways, one line running through the centre of the district from north to south and the other from east to west, thus dividing it into four sectors. In consideration of the small mileage of railway compared with its size the district may not at first sight appear to be well served by its railways, but actually the alignments of these lines are so

well placed that almost the entire area is tapped to a reasonable extent, the traffic being brought to the railways by several cross-roads running into the country. The part least served is the lowlying country forming the south-eastern sector. The district contains approximately 3 miles of railway in respect of each 100 square miles of country.

X—Existing road system.

The road system at present in existence in the district comprises an approximate total length of 2,618 miles of metalled and unmetalled roads of all classes, for the upkeep of which several authorities are responsible. The mileage of the roads under each administrative authority in the district and the average annual expenditure incurred on their upkeep are given below. The figures shown have been obtained from the respective authorities, but must be taken as being only approximately correct, as in many cases the records and accounts are not kept in such a way as to make it possible to obtain accurate information under the separate heads into which the roads have been divided. They are, however, of sufficient accuracy to serve the purpose of the present report:—

Class.	Authority responsible for upkeep.	Metalled roads.			Unmetalled roads.		
		Mileage on 31st March 1937.	Total annual expenditure, being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.	Mileage on 31st March 1937.	Total annual expenditure, being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.
1	2	3	4	5	6	7	8
		Miles.	Rs.	Rs.	Miles.	Rs.	Rs.
I	*Government roads* maintained by the Communications and Works Department.	(a) 111	74,036	666	Nil	..	..
II	*District roads* maintained directly by the District Board.	(b) 454	About 1,90,000	About 400	About 419	About 60,000	About 37
III	*Subdivisional Roads* maintained by Local Boards working under the control of the District Board.	(c) 19	..	..	1,214	Not available.	..
IV	*Urban roads* maintained by municipalities.	62	Incomplete.	..	50	Incomplete.	..
V	*Village roads* maintained by Union Boards.	4	600	140	285	2,586	9
	Total ..	650	2,64,636	..	1,968	62,586	..

(*a*) Includes (*i*) 4·00 miles of hard stone metal and (*ii*) 107·16 miles of mooram or laterite.

(*b*) Includes (*i*) 2·65 miles of bitumen or tar paint, (*ii*) 378·6 miles of mooram or laterite, and (*iii*) 73·63 miles of brick metal.

(c) Laterite.

The first two of the classes listed above, viz., *Government* roads and *District* roads, form the main lines of communication in the district, and constitute the most important portion of the road system. A detailed list of the roads included under these two classes is given in Appendix V to this chapter, and the alignments followed by them are shown in the skeleton sketch map of the district (Plate XI), each item being indicated by the

same index number in both the map and the list so as to facilitate reference. In the case of the *District* roads these index numbers also correspond with the schedule of roads issued under the authority of the District Board, in which will be found brief particulars showing crest width, metalled width, number and types of bridges, etc., of all district and subdivisional roads. This record being in existence and always available for reference, no attempt has been made to reproduce the information in the present report. The remaining three classes of roads, viz., *Subdivisional, Urban* and *Village* roads, are of minor importance from the point of view of the present scheme and have, therefore, neither been listed nor shown on the map.

XI—Road investigation and traffic census.

An account of the investigations carried out with the object of studying the nature of the existing roads and bridges in the several districts of the province has already been given in Chapter V, which deals with this question for the province as a whole. As explained in the same chapter, details of the observations taken, although not included in the present report, have been placed on record in the office file. In this district the examination made and particulars recorded relate to 182 miles of road and 19,739 running feet of bridging, which includes 7 major bridges and 1,002 minor bridges and culverts. Particulars of the bridges on the existing railways in the district were also collected to help in the examination of the general drainage conditions and the study of the important question of obstruction to the same caused by the construction of raised embankments. A classification according to length of opening has been made of the waterway of the bridges on the more important road and railway embankments existing in the district. This is shown in Appendix VI to this chapter.

A census of traffic was taken by actual count on some of the roads in the district selected as representative of the several classes into which the existing road system could be graded according to volume of traffic carried. Each traffic observation covered a period of seven consecutive days and nights. In most cases the observations were repeated at the same point at different times of the year, so as to indicate the extent to which the traffic varied. A complete record of the observations taken is given in Appendix VII to this chapter, and an examination of the results will be found in Chapter V, in which the general question of traffic statistics in the province as a whole is dealt with.

On account of the heavy cost involved the preparation of a record of traffic by actual count had to be restricted to only a few roads in the district. Steps were, however, taken to obtain a rough idea of the total traffic on each of the other important roads in the district, the method employed being to have these roads arranged approximately in relative order of traffic importance as compared with the roads on which actual observations had been taken. This was done by the District Engineer in consultation with his staff, these officers having a good knowledge of local conditions, and being in the best position to judge of the probable traffic intensities on the roads under their control. The results, including both the actual observations and the approximations mentioned above, are shown in graphical form in Appendix VIII to this chapter.

XII—Scheme for improved roads.

The general principles followed in selecting the alignments for the roads included in the improved road system in the several districts in the province have already been explained in Chapter VI, and need not be repeated here. In accordance with these principles, a complete scheme has

been framed in the district for a road system which is considered sufficiently comprehensive to serve the needs of the district to a reasonable degree, in respect of both internal communication within the district itself, and of inter-district, provincial and inter-provincial communication.

The roads included in the complete district scheme are listed below, each item being assigned an index letter for use in referring to the item in other parts of the report:—

Index letter.	Location.		Approximate length in miles.	Classification.
	From—	To—		
A ..	Harihar ..	Dhumsai ..	82	Provincial—Trunk.
B ..	Midnapore ..	Jamdahara ..	37	Inter-district—Main.
C ..	Khajurabheri ..	Dhankia ..	66	District—Main.
D ..	Silda ..	Mandaldiha ..	6	Ditto.
E ..	Abardihi ..	Kantapahari ..	12	District—Secondary.
F ..	Goaltore ..	Ghatal ..	42	District—Main.
G ..	Chandrakona ..	Garhbeta ..	9	District—Seondary.
H	Ghatal ..	Khadal-Gobra ..	97	District—Main.
I ..	Kuturia ..	Kalmijor ..	30	Ditto.
J ..	Lodhasuli ..	Kherikamathani ..	32	District—Secondary.
K ..	Tentulia ..	Gopiballavpur ..	6	Ditto.
L ..	Kesiari ..	Biramput ..	50	District—Main.
M ..	Debra ..	Paharichak ..	35	Ditto.
N ..	Kausalya ..	Bhamua ..	28	Ditto.
O ..	Saridaspur ..	Ghurbari ..	15	Ditto.
P ..	Bargoda-Gudar ..	Sutahata ..	21	District—Secondary.
Q ..	Lakshya ..	Suklalpur ..	3	Ditto.
R ..	Atmaramchak ..	Alichak ..	16	Ditto.
S ..	Baincha ..	Matiberua ..	20	Ditto.
		Total ..	607	

A descriptive statement showing particulars of length, route, purpose served, cost, etc., of the items is given in Appendix IX to this chapter, and the location of the roads is shown in the skeleton sketch map of the district (Plate XI), the same index letters being used both in the statement and in the map in order to facilitate reference.

The figures given in the statement to show the approximate cost for the several items included in the scheme are based on rough estimates worked out after brief examination at site and collection of the necessary data. The type of investigations made, and the method employed for preparing the rough estimates, have been described in Chapter VIII, which deals with the question of the preparation of rough estimates for the whole province. As explained in the same chapter, it must be clearly understood that the figures furnished in these estimates, although not based on haphazard guesswork, cannot be taken as representing correctly the expenditure likely to be involved during actual construction, and cannot, therefore, be used for obtaining administrative approval.

A record of the observations made and the complete rough estimates for the items of the scheme are given in Appendix X to this chapter. It will be seen that two alternative rough estimates have been prepared for each item, the first in accordance with Specification "A", and the second in accordance with Specification "B". The details of these specifications, and the reasons which have led to the adoption of two alternative standard specifications, have been fully explained in Chapter VII, which deals with the general question of the adoption of standard specifications for the complete road scheme in the whole province. The total length of improved roads proposed in the district is 607 miles, which includes 275 miles of existing metalled road, 220 miles of existing unmetalled road, and 112 miles of entirely new road, these figures being approximate, as the lengths are susceptible to change when the detailed alignments are actually set out.

The total estimated cost of the district scheme (inclusive of bridging) stands at Rs. lakhs as per Specification "A" and Rs. lakhs as per Specification "B". The scheme provides 1 mile of road in respect of every 8·6 square miles of area, or in respect of every 4,611 heads of population in the district. On the assumption that a road, railway or steamer service is capable of tapping the country lying within 5 miles on either side of it, and neglecting obstructions which may be offered by unbridged rivers, the existing railways and steamer services and the proposed roads, when taken together, will serve 92·9 per cent. of the total area of the district, leaving untapped only 369 square miles of country, as indicated in the skeleton sketch map of the district (Plate XI). The area directly served by the road system alone amounts to approximately 4,537 square miles, representing 88·4 per cent. of the total area of the district.

The scheme provides for the connection by road of the district headquarters and the headquarters of all subdivisions. Direct road connection has also been provided to 25 thana headquarters, while 4 thana headquarters, although not directly connected, will be within 5 miles of an improved road, which will make it easy for a short connecting link to be added at a later stage. It has not been found possible to provide an improved road within 5 miles of the remaining thana headquarters (4 in number) in the district.

XIII—Acceptance of district scheme for improved roads by district and other authorities.

A descriptive list of the roads included in the complete district scheme, together with a sketch map showing their positions, was sent to the authorities mentioned below for examination and expression of their opinion as to the suitability of the scheme from their respective points of view. The extent to which the scheme has been approved or objected to by the various authorities is given below :—

(1) District Board—Approves scheme in full.

(2) Collector—Approves scheme in full.

(3) Commissioner—Approves scheme in full.

(4) Bengal-Nagpur Railway—Considers scheme unobjectionable.

In order to make the report self-contained in respect of the important question relating to acceptance of the scheme by the several authorities concerned, and to place on record such documents as may be required for reference in dealing with this question at a later date, it has been considered desirable to attach copies of the correspondence on the subject with the various parties.

Copies of the correspondence with the Collector and the Chairman, District Board, which relate exclusively to this district, are given in Appendix XI to this chapter.

Copies of the correspondence with the Commissioner of the Burdwan Division, which relate to the six districts forming the division, are given in Appendix IX to Chapter XXXVII.

Copies of the correspondence with the Railway, which relates to the entire area served by this line, are given in Appendix IV to Chapter XXXVI.

In this district, therefore, unanimous acceptance by all parties concerned has been obtained in respect of the entire scheme.

XIV—Order of priority for construction.

The question of the order in which the roads selected to form the complete district scheme should be taken up for construction, has also been considered from the district point of view. The views of the Collector of the district and of the District Board on this subject were invited, and copies of the relevant correspondence are given in Appendix XI to this chapter. The order in which the district authorities place the items included in the scheme is shown below:—

Index letter.	Location.		Order of priority assigned by—	
	From—	To—	District Board.	Collector.
A ..	Harihar ..	Dhumsai ..	I ..	The Collector agrees with the District Board.
B ..	Midnapore	Jamdahara ..	VIII ..	
C ..	Khajurabheri ..	Dhankia ..	VII ..	
D ..	Silda ..	Mandaldiha ..	XX ..	
E ..	Abardihi ..	Kantapahari ..	XVII ..	
F ..	Goaltore ..	Ghatal ..	XVI ..	
G ..	Chandrakona ..	Garhbeta ..	XVIII	
H ..	Ghatal ..	Khadal-Gobra ..	II, IV and IX(*a*).	
I ..	Kuturia ..	Kalmijor ..	IV and XIII (*b*).	
J ..	Lodhasuli ..	Kherikamthani ..	XII and XIX(*c*).	
K ..	Tentulia ..	Gopiballapur ..	XII ..	
L ..	Kesiari ..	Biramput ..	XV ..	
M ..	Debra ..	Paharichak ..	VI and XIV(*d*).	
N ..	Kausalya ..	Bhamua ..	V ..	
O ..	Saridaspur ..	Ghurbari ..	VI ..	
P ..	Bargoda-Gudar ..	Sutahata ..	II and III(*e*).	
Q ..	Lakshya ..	Suklalpur ..	II ..	
R ..	Atmaramchak ..	Alichak ..	XI ..	
S ..	Baincha ..	Matiberua ..	X ..	

(*a*) The District Board divides the road into 3 sections, viz., (*i*) Basdebpur-Khadal Gobra, (*ii*) Ghatal-Kalmijor and (*iii*) Kalmijor-Panskura, the order of priority for which is as shown in the table; the section Panskura-Basdebpur is already metalled.

(*b*) The District Board divides the road into 2 sections, viz., (*i*) Keshpur-Kalmijor and (*ii*) Kuturia-Keshpur, the order of priority for which is as shown in the table.

(*c*) The District Board divides the road into 2 sections, viz., (*i*) Lodhasuli-Tentulia and Tentulia-Karikamathani, the order of priority for which is as shown in the table.

(*d*) The District Board divides the road into 2 sections, viz., (*i*) Paharichak-Saridaspur and (*ii*) Debra-Saridaspur, the order of priority for which is as shown in the table.

(*e*) The District Board divides the road into 3 sections, viz., (*i*) Basdebpur-Lakshia, (*ii*) Basdebpur-Bargudar and (*iii*) Lakshia-Sutahata. The order of priority given to the first of these is II, and that given to the remaining two sections combined is III.

APPENDICES TO CHAPTER XIV.

Appendix I.

Midnapore.

List of subdivisions and thanas, showing area, population and density as per 1931 census.

Subdivisions and thanas.	Area.	Population.	Density per square mile.
	Square miles.	Number.	
I. Sadar subdivision	*2,028*	*860,622*	*424*
1. Midnapore	130	75,078	578
2. Kharagpur	197	79,510	404
3. Kharagpur Town	20	58,134	2,907
4. Salbani	213	56,795	267
5. Keshpur	186	73,853	397
6. Debra	132	57,492	436
7. Sabang	120	71,286	594
8. Pingla	87	46,944	540
9. Narayangarh	217	65,927	304
10. Keshiari	92	37,865	412
11. Garhbeta	409	122,079	298
12. Dantan	170	87,557	515
13. Mohanpur	55	28,102	511
II. Jhargram subdivision	*1,187*	*389,130*	*328*
1. Gopiballavpur	314	121,339	386
2. Nayagram	174	50,533	290
3. Jhargram	209	60,438	289
4. Jamboni	125	41,870	335
5. Binpur	365	114,950	315
III. Tamluk subdivision	*749*	*643,157*	*859*
1. Tamluk	107	108,209	1,011
2. Moyna	44	54,072	1,229
3. Sutahata	127	82,858	652
4. Panskura	155	144,467	932
5. Nandigram	191	140,394	735
6. Mahisadal	125	113,157	905
IV. Ghatal subdivision	*369*	*273,308*	*741*
1. Ghatal	90	75,799	842
2. Daspur	128	118,379	925
3. Chandrakona	151	79,130	524
V. Contai subdivision	*912*	*632,876*	*694*
1. Khejri	163	77,204	474
2. Bhagwanpur	140	114,791	820
3. Contai	198	166,851	843
4. Egra	156	94,069	603
5. Ramnagar	117	84,818	725
6. Pataspur	138	95,143	689

Appendix II.

Midnapore.

Statement showing Hâts and Melas arranged roughly in order of importance.

PART 1—HÂTS.

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
1	Mangalmar ..	Pataspur ..	Bi-weekly ..	3,000
2	Ghutia	Jamboni ..	Weekly ..	5,500
3	Teropekhia ..	Mahishadal ..	Bi-weekly ..	2,750
4	Itabera ..	Bhagawanpur ..	Ditto ..	2,500
5	Khakurda	Narayangarh ..	Ditto ..	2,500
6	Porihati	Jamboni ..	Weekly ..	4,500
7	Geoakhali	Mahishadal ..	Bi-weekly ..	2,250
8	Radhaganje ..	Ditto ..	Ditto ..	1,750
9	Mahishadal ..	Ditto ..	Ditto ..	1,250
10	Danton Bazar ..	Danton ..	Daily ..	500
11	Ghatal Town ..	Ghatal ..	Ditto ..	500
12	Thakurbari ..	Chandrakona ..	Ditto ..	500
13	Mahammadpur ..	Contai ..	Thrice a week ..	800
14	Contai	Ditto ..	Bi-weekly ..	2,000
15	Satmila	Ditto ..	Ditto ..	2,000
16	Tekhali	Mahishadal ..	Ditto ..	1,150
17	Dakhin Anuka ..	Mayna ..	Weekly ..	2,000
18	Mirgodaganj ..	Contai ..	Bi-weekly ..	1,000
19	Mirzapur	Ditto ..	Ditto ..	1,000
20	Kapalberia ..	Bhagawanpur ..	Ditto ..	1,000
21	Brindabanpur ..	Chandrakona ..	Ditto ..	1,000
22	Kanchi	Mahishadal ..	Ditto ..	1,000
23	Balighai	Egra ..	Ditto ..	900
24	Nandakumar ..	Mahishadal ..	Ditto ..	900
25	Belughati	Ditto ..	Ditto ..	900
26	Atrigori	Contai ..	Ditto ..	800
27	Loada	Debra ..	Ditto ..	800
28	Balichak	Ditto ..	Ditto ..	800
29	Kesiari	Kesiari ..	Ditto ..	800
30	Amdubi	Keshpur ..	Weekly ..	1,500
31	Madpur	Kharagpur ..	Thrice a week ..	500
32	Lalgarh	Binpur ..	Weekly ..	1,500
33	Deuli	Contai ..	Ditto ..	1,500
34	Kharar	Ghatal ..	Daily ..	300
35	Kukrahati	Mahisadal ..	Weekly ..	1,375
36	Ilaspur	Bhagawanpur ..	Bi-weekly ..	600
37	Egra	Egra ..	Ditto ..	500
38	Binpur	Binpur ..	Weekly ..	1,000
39	Silda	Ditto ..	Ditto ..	1,000
40	Khakrai	Nayagram ..	Ditto ..	1,000
41	Baligiria	Ditto ..	Ditto ..	1,000
42	Surdiha	Jhargram ..	Ditto ..	1,000
43	Jhargram	Ditto ..	Ditto ..	1,000
44	Kotlauri	Bhagawanpur ..	Bi-weekly ..	500
45	Bhagawanpur ..	Ditto ..	Ditto ..	500
46	Sarasanka	Danton ..	Weekly ..	1,000
47	Danton	Ditto ..	Ditto ..	1,000
48	Mohar	Sabgang ..	Ditto ..	1,000
49	Sabang	Ditto ..	Ditto ..	1,000
50	Radhamohanpur ..	Debra ..	Bi-weekly ..	500
51	Jalchak	Pingla ..	Ditto ..	500

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
52	Khadamon ..	Pingla ..	Bi-weekly ..	500
53	Kurjopur	Ditto ..	Ditto ..	500
54	Kamalpur	Daspur ..	Ditto ..	500
55	Sonakhali	Ditto ..	Ditto ..	500
56	Balishai, Patra ..	Contai ..	Weekly ..	1,000
57	Balishai	Ditto ..	Daily ..	200
58	Garsafat	Moyna ..	Bi-weekly ..	500
59	Shyamra	Ditto ..	Ditto ..	500
60	Narayangarh ..	Narayangarh ..	Weekly ..	1,000
61	Panchrole	Egra ..	Bi-weekly ..	500
62	Paniparul	Ditto ..	Ditto ..	500
63	Baraneari	Ditto ..	Ditto ..	500
64	Amurshi Kasba ..	Potaspur ..	Daily ..	200
65	Protap Dighi ..	Ditto ..	Bi-weekly ..	500
66	Saralyachak ..	Khejri ..	Ditto ..	500
67	Nizbazar	Chandrakona ..	Ditto ..	500
68	Brindabanbazar ..	Ditto ..	Daily ..	200
69	Naraghat	Mahishadal ..	Weekly ..	400
70	Haludabari ..	Khejri ..	Bi-weekly ..	450
71	Dubda	Egra ..	Ditto ..	400
72	Panchat	Potaspur ..	Ditto ..	400
73	Godaibheri ..	Ditto ..	Ditto ..	400
74	Takas Bettala ..	Khejri ..	Ditto ..	400
75	Ijmalichak	Moyna ..	Ditto ..	400
76	Dohigorihat ..	Binpur ..	Weekly ..	800
77	Machneu	Bhagawanpur ..	Bi-weekly ..	400
78	Jilantapara ..	Sabang ..	Ditto ..	400
79	Mattighat	Debra ..	Ditto ..	400
80	Golgram	Ditto ..	Ditto ..	400
81	Pingla	Pingla ..	Bi-weekly ..	400
82	Gobindanagar ..	Daspur ..	Ditto ..	400
83	Chatradhara ..	Contai ..	Ditto ..	400
84	Nechindar	Ditto ..	Ditto ..	400
85	Danda Parulia ..	Ditto ..	Ditto ..	400
86	Durmat	Ditto ..	Ditto ..	400
87	Rajnagar	Daspur ..	Ditto ..	400
88	Harirampur ..	Ditto ..	Ditto ..	400
89	Dubrajpur	Ditto ..	Ditto ..	200
90	Gopinathpur ..	Bhagawanpur ..	Ditto ..	350
91	Khagrageria ..	Sabang ..	Weekly ..	700
92	Lankagarh	Daspur ..	Bi-weekly ..	350
93	Dasgram	Sabang ..	Weekly ..	600
94	Dubrajpur	Ditto ..	Bi-weekly ..	300
95	Uttararbora ..	Danton ..	Weekly ..	600
96	Kakra	Bhagwanpur ..	Bi-weekly ..	300
97	Bainda	Ditto ..	Ditto ..	300
98	Ugalsandha ..	Nayagram ..	Weekly ..	600
99	Bathnary	Egra ..	Bi-weekly ..	300
100	Amarpur	Pataspur ..	Ditto ..	300
101	Tupehibar	Ditto ..	Ditto ..	300
102	Khanikotbar ..	Ditto ..	Ditto ..	300
103	Birbanda	Khejri ..	Ditto ..	300
104	Kamarda-Barakaspur ..	Ditto ..	Ditto ..	300
105	Kalagachha ..	Ditto ..	Ditto ..	300
106	Kutharganj ..	Moyna ..	Weekly ..	600
107	Martolla	Debra ..	Ditto ..	600
108	Uttarbarh	Pingla ..	Bi-weekly ..	300
109	Kultiori	Gopiballavpur ..	Weekly ..	600
110	Gholsai	Ghatal ..	Bi-weekly ..	300
111	Jote Ghonshyam ..	Daspur ..	Ditto ..	300
112	Daspur ..	Ditto ..	Ditto ..	300
113	Aladarput	Contai ..	Ditto ..	300
114	Rupnagar	Ditto ..	Ditto ..	300

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
115	Chattoveri ..	Contai	Thrice a week	200
116	Joykrishnapur	Daspur	Bi-weekly	300
117	Basudebpur	Ditto	Ditto	300
118	Belia	Jamboni	Weekly	550
119	Dhapaui	Jhargram	Ditto	550
120	Perua	Sabang	Bi-weekly	250
121	Balpai	Ditto	Weekly	500
122	Sashanagar	Danton	Ditto	500
123	Anikola	Ditto	Ditto	500
124	Dhaneswarpur	Ditto	Ditto	500
125	Joykrishnapur	Kesiari	Ditto	500
126	Mohanpur ..	Mohanpur	Ditto	500
127	Naya Gram	Nayagram	Ditto	500
128	Dakhin Choumukh	Egra	Bi-weekly	250
129	Pusa	Potaspur	Ditto	250
130	Bhagada	Ditto	Ditto	250
131	Brajaballavpur	Ditto	Ditto	250
132	Pirakata	Salboni	Weekly	500
133	Shekna	Kharagpur	Ditto	500
134	Nanisari	Narayangarh	Ditto	500
135	Kushbasan	Ditto	Ditto	500
136	Belki	Sabang	Ditto	500
137	Patuhat	Debra	Bi-weekly	250
138	Salbani	Gopiballavpur	Weekly	500
139	Debra	Ditto	Ditto	500
140	Kukrakhupi	Ditto	Ditto	500
141	Sashra	Ditto	Ditto	500
142	Nimtalla	Daspur	Daily	100
143	Kalindi Baksi	Contai	Weekly	500
144	Chandarpur ..	Ditto	Daily	100
145	Depal	Ditto	Weekly	500
146	Kanai Dighi	Ditto	Bi-weekly	250
147	Gobardhanpur	Pingla	Weekly	500
148	Palasi	Debra	Bi-weekly	250
149	Durgal	Ditto	Ditto	250
150	Babartar	Mahishadal	Ditto	225
151	Negni	Nayagram	Weekly	400
152	Chenra	Bhagawanpur	Bi-weekly	200
153	Bikramnagar	Ditto	Ditto	200
154	Mohati	Ditto	Ditto	200
155	Krishnagar	Ditto	Ditto	200
156	Benia	Sabang	Ditto	200
157	Bhermia	Ditto	Weekly	400
158	Jobalda	Danton	Ditto	400
159	Amorda	Ditto	Bi-weekly	200
160	Kushgeria ..	Kesiari	Weekly	400
161	Basudebbera	Bhagawanpur	Bi-weekly	200
162	Bhupatinagar	Ditto	Ditto	200
163	Jhargram	Jhargram	Weekly	400
164	Barkada	Nayagram	Ditto	400
165	Belpahari	Binpur	Ditto	400
166	Ghatna	Egra	Bi-weekly	200
167	Kirtipur	Ditto	Ditto	200
168	Betahat	Ditto	Ditto	200
169	Kudi	Ditto	Ditto	200
170	Chorepalia	Ditto	Ditto	200
171	Shyamharibar	Ditto	Ditto	200
172	Nonakendra	Potaspur	Weekly	400
173	Brojakrishnapur	Ditto	Bi-weekly	200
174	Bulakipur ..	Ditto	Ditto	200
175	Kulta	Khejri	Ditto	200
176	Gopichak ..	Ditto	Ditto	200
177	Salboni	Salboni	Ditto	200

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
178	Birbhadrapur ..	Kharagpur ..	Weekly ..	400
179	Muksudpur ..	Ditto ..	Ditto ..	400
180	Bamikazar ..	Narayangarh ..	Bi-weekly ..	200
181	Pandisole	Gopiballavpur ..	Weekly ..	400
182	Ledhua	Sabang ..	Ditto ..	400
183	Sreerampur ..	Debra ..	Bi-weekly ..	200
184	Durgapur	Contai ..	Ditto ..	200
185	Jhikra	Ditto ..	Ditto ..	200
186	Chata Padmapur ..	Ditto ..	Weekly ..	400
187	Fuleswar Durmut ..	Ditto ..	Bi-weekly ..	200
188	Balidaria ..	Gopiballavpur ..	Weekly ..	400
189	Ghusnipukur ..	Pingla ..	Ditto ..	400
190	Bengral	Ghatal ..	Bi-weekly ..	200
191	Bhajachowhi ..	Contai ..	Ditto ..	200
192	Majna	Ditto ..	Ditto ..	200
193	Aria Fatashpur ..	Ditto ..	Ditto ..	200
194	Dakshin Deuki ..	Ditto ..	Ditto ..	200
195	Jhakra	Chandrakona ..	Ditto ..	200
196	Dhangri	Jhargram ..	Weekly ..	350
197	Munda Maror ..	Khejri ..	Bi-weekly ..	175
198	Gurgram	Bhagawanpur ..	Ditto ..	175
199	Sagoa	Danton ..	Weekly ..	300
200	Bhanjapur ..	Sabang ..	Bi-weekly ..	150
201	Debra	Debra ..	Weekly ..	300
202	Pardrai	Pingla ..	Ditto .	300
203	Harma	Ditto ..	Bi-weekly ..	150
204	Rohini	Gopiballavpur ..	Weekly ..	300
205	Radhanagar ..	Ghatal ..	Bi-weekly ..	150
206	Shyamganj ..	Daspur ..	Weekly ..	300
207	Ranichak	Ditto ..	Ditto ..	300
208	Abdarput	Contai ..	Bi-weekly ..	150
209	Darna	Ditto ..	Thrice a week ..	100
210	Bhuyajibar ..	Ditto ..	Weekly ..	300
211	Dihimukundpur ..	Ditto ..	Bi-weekly ..	150
212	Jagibar	Ditto ..	Ditto ..	150
213	Nanda Arya ..	Ditto ..	Ditto ..	150
214	Deulbar	Ditto ..	Ditto ..	150
215	Palaspai	Daspur ..	Ditto ..	150
216	Nayabasan ..	Gopiballavpur ..	Weekly ..	300
217	Kukuriadanga ..	Potaspur ..	Ditto ..	300
218	Baliagirindapur ..	Ditto ..	Bi-weekly ..	150
219	Andhunia ..	Binpur ..	Weekly ..	300
220	Kukrakhupi ..	Jamboni ..	Ditto ..	300
221	Berajul	Nayagram ..	Ditto ..	300
222	Rangamatia ..	Ditto ..	Ditto ..	300
223	Khudmore ..	Ditto ..	Ditto ..	300
224	Sahasralinga ..	Ditto ..	Ditto ..	300
225	Nayagram	Jhargram ..	Ditto ..	300
226	Kurul	Danton ..	Ditto ..	300
227	Tarka	Ditto ..	Ditto ..	300
228	Ekorakhi	Ditto ..	Ditto ..	300
229	Kartranka	Potaspur ..	Bi-weekly ..	150
230	Khar	Ditto ..	Ditto ..	150
231	Rampur	Narayangarh ..	Weekly ..	300
232	Chingarduna ..	Khejri ..	Bi-weekly ..	150
233	Boga ..	Ditto ..	Ditto ..	150
234	Shirsha	Keshpur ..	Weekly ..	300
235	Hatpara	Chandrakona ..	Thrice a week ..	100
236	Gokulpur	Kharagpur ..	Weekly ..	300
237	Binapur	Ditto ..	Ditto ..	300
238	Munilgar	Ditto ..	Bi-weekly ..	150
239	Nimpasta-Darimari ..	Bhagwanpur ..	Weekly ..	275
240	Chandi	Jhargram ..	Ditto ..	250
241	Dhansole	Gopiballavpur ..	Ditto ..	250

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
115	Chattoveri ..	Contai	Thrice a week	200
116	Joykrishnapur	Daspur	Bi-weekly	300
117	Basudebpur	Ditto	Ditto	300
118	Belia	Jamboni	Weekly	550
119	Dhapaui	Jhargram	Ditto	550
120	Perua	Sabang	Bi-weekly	250
121	Balpai	Ditto	Weekly	500
122	Sashanagar	Danton	Ditto	500
123	Anikola	Ditto	Ditto	500
124	Dhaneswarpur	Ditto	Ditto	500
125	Joykrishnapur	Kesiari	Ditto	500
126	Mohanpur ..	Mohanpur	Ditto	500
127	Naya Gram	Nayagram	Ditto	500
128	Dakhin Choumukh	Egra	Bi-weekly	250
129	Pusa	Potaspur	Ditto	250
130	Bhagada	Ditto	Ditto	250
131	Brajaballavpur	Ditto	Ditto	250
132	Pirakata	Salboni	Weekly	500
133	Shekna	Kharagpur	Ditto	500
134	Nanisari	Narayangarh	Ditto	500
135	Kushbasan	Ditto	Ditto	500
136	Belki	Sabang	Ditto	500
137	Patuhat	Debra	Bi-weekly	250
138	Salbani	Gopiballavpur	Weekly	500
139	Debra	Ditto	Ditto	500
140	Kukrakhupi	Ditto	Ditto	500
141	Sashra	Ditto	Ditto	500
142	Nimtalla	Daspur	Daily	100
143	Kalindi Baksi	Contai	Weekly	500
144	Chandarpur ..	Ditto	Daily	100
145	Depal	Ditto	Weekly	500
146	Kanai Dighi	Ditto	Bi-weekly	250
147	Gobardhanpur	Pingla	Weekly	500
148	Palasi	Debra	Bi-weekly	250
149	Durgal	Ditto	Ditto	250
150	Babartar	Mahishadal	Ditto	225
151	Negni	Nayagram	Weekly	400
152	Chenra	Bhagawanpur	Bi-weekly	200
153	Bikramnagar	Ditto	Ditto	200
154	Mohati	Ditto	Ditto	200
155	Krishnagar	Ditto	Ditto	200
156	Benia	Sabang	Ditto	200
157	Bhermia	Ditto	Weekly	400
158	Jobalda	Danton	Ditto	400
159	Amorda	Ditto	Bi-weekly	200
160	Kushgeria ..	Kesiari	Weekly	400
161	Basudebbera	Bhagawanpur	Bi-weekly	200
162	Bhupatinagar	Ditto	Ditto	200
163	Jhargram	Jhargram	Weekly	400
164	Barkada	Nayagram	Ditto	400
165	Belpahari	Binpur	Ditto	400
166	Ghatna	Egra	Bi-weekly	200
167	Kirtipur	Ditto	Ditto	200
168	Betahat	Ditto	Ditto	200
169	Kudi	Ditto	Ditto	200
170	Chorepalia	Ditto	Ditto	200
171	Shyamharibar	Ditto	Ditto	200
172	Nonakendra	Potaspur	Weekly	400
173	Brojakrishnapur	Ditto	Bi-weekly	200
174	Bulakipur ..	Ditto	Ditto	200
175	Kulta	Khejri	Ditto	200
176	Gopichak	Ditto	Ditto	200
177	Salboni	Salboni	Ditto	200

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
178	Birbhadrapur ..	Kharagpur ..	Weekly ..	400
179	Muksudpur ..	Ditto ..	Ditto ..	400
180	Bamikazar ..	Narayangarh ..	Bi-weekly ..	200
181	Pandisole	Gopiballavpur ..	Weekly ..	400
182	Ledhua	Sabang ..	Ditto ..	400
183	Sreerampur ..	Debra ..	Bi-weekly ..	200
184	Durgapur	Contai ..	Ditto ..	200
185	Jhikra	Ditto ..	Ditto ..	200
186	Chata Padmapur ..	Ditto ..	Weekly ..	400
187	Fuleswar Durmut ..	Ditto ..	Bi-weekly ..	200
188	Balidaria ..	Gopiballavpur ..	Weekly ..	400
189	Ghusnipukur ..	Pingla ..	Ditto ..	400
190	Bengral	Ghatal ..	Bi-weekly ..	200
191	Bhajachowhi ..	Contai ..	Ditto ..	200
192	Majna	Ditto ..	Ditto ..	200
193	Aria Fatashpur ..	Ditto ..	Ditto ..	200
194	Dakshin Deuki ..	Ditto ..	Ditto ..	200
195	Jhakra	Chandrakona ..	Ditto ..	200
196	Dhangri	Jhargram ..	Weekly ..	350
197	Munda Maror ..	Khejri ..	Bi-weekly ..	175
198	Gurgram	Bhagawanpur ..	Ditto ..	175
199	Sagoa	Danton ..	Weekly ..	300
200	Bhanjapur ..	Sabang ..	Bi-weekly ..	150
201	Debra	Debra ..	Weekly ..	300
202	Pardrai	Pingla ..	Ditto ..	300
203	Harma	Ditto ..	Bi-weekly ..	150
204	Rohini	Gopiballavpur	Weekly ..	300
205	Radhanagar ..	Ghatal ..	Bi-weekly ..	150
206	Shyamganj ..	Daspur ..	Weekly ..	300
207	Ranichak	Ditto ..	Ditto ..	300
208	Abdarput	Contai ..	Bi-weekly .	150
209	Darna	Ditto ..	Thrice a week .	100
210	Bhuyajibar ..	Ditto ..	Weekly .	300
211	Dihimukundpur ..	Ditto ..	Bi-weekly ..	150
212	Jagibar	Ditto ..	Ditto .	150
213	Nanda Arya ..	Ditto ..	Ditto ..	150
214	Deulbar	Ditto ..	Ditto .	150
215	Palaspai	Daspur ..	Ditto ..	150
216	Nayabasan ..	Gopiballavpur ..	Weekly ..	300
217	Kukuriadanga ..	Potaspur ..	Ditto ..	300
218	Baliagirindapur ..	Ditto ..	Bi-weekly ..	150
219	Andhunia ..	Binpur ..	Weekly .	300
220	Kukrakhupi ..	Jamboni ..	Ditto	300
221	Berajul	Nayagram ..	Ditto .	300
222	Rangamatia ..	Ditto ..	Ditto ..	300
223	Khudmore ..	Ditto ..	Ditto .	300
224	Sahasralinga ..	Ditto ..	Ditto .	300
225	Nayagram	Jhargram ..	Ditto ..	300
226	Kurul	Danton ..	Ditto ..	300
227	Tarka	Ditto ..	Ditto ..	300
228	Ekorakhi	Ditto ..	Ditto ..	300
229	Kartranka	Potaspur ..	Bi-weekly ..	150
230	Khar	Ditto ..	Ditto ..	150
231	Rampur	Narayangarh ..	Weekly ..	300
232	Chingarduna ..	Khejri ..	Bi-weekly ..	150
233	Boga ..	Ditto ..	Ditto ..	150
234	Shirsha	Keshpur ..	Weekly ..	300
235	Hatpara	Chandrakona ..	Thrice a week ..	100
236	Gokulpur	Kharagpur ..	Weekly ..	300
237	Binapur	Ditto ..	Ditto ..	300
238	Munilgar	Ditto ..	Bi-weekly ..	150
239	Nimpasta-Darimari ..	Bhagwanpur ..	Weekly ..	275
240	Chandi	Jhargram ..	Ditto ..	250
241	Dhansole	Gopiballavpur ..	Ditto ..	250

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
242	Sarta	Sabang	Weekly	250
243	Khetrapal	Potaspur	Ditto	250
244	Pantsi	Bhagawanpur	Bi-weekly	115
245	Kuarda	Gopiballavpur	Weekly	225
246	Hijli	Jamboni	Ditto	200
247	Kuthyahat	Debra	Bi-weekly	100
248	Sitalda	Sabang	Weekly	200
249	Monoharpur	Danton	Ditto	200
250	Nandakurina	Ditto	Ditto	200
251	Paborichak	Ditto	Ditto	200
252	Rela	Ditto	Ditto	200
253	Jenobar	Ditto	Ditto	200
254	Lakshipur	Keshiari	Ditto	200
255	Dhanpora	Mohanpur	Ditto	200
256	Nilda	Ditto	Ditto	200
257	Barkapur	Bhagawanpur	Bi-weekly	100
258	Udbad	Ditto	Ditto	100
259	Loahasuli	Jhargram	Weekly	200
260	Asti	Nayagram	Ditto	200
261	Chak Bolia	Daspur	Bi-weekly	100
262	Haldia	Contai	Weekly	200
263	Shikarpatibar	Ditto	Bi-weekly	100
264	Maithua	Ditto	Weekly	200
265	Paldhui	Ditto	Ditto	200
266	Sapna	Ditto	Ditto	200
267	Kumirda	Ditto	Bi-weekly	100
268	Marishda	Ditto	Ditto	100
269	Dariapur	Ditto	Ditto	100
270	Madhi	Ditto	Ditto	100
271	Panchthupi	Pingla	Bi-weekly	100
272	Basanchora	Contai	Daily	100
273	Daisai	Ditto	Bi-weekly	100
274	Kukurmandi	Ditto	Ditto	100
275	Londa	Ditto	Ditto	100
276	Kadua Mukundpur	Ditto	Ditto	100
277	Deulbar	Ditto	Ditto	100
278	Kalmijole	Daspur	Ditto	100
279	Chaipat	Ditto	Ditto	100
280	Tapsia	Gopiballavpur	Weekly	200
281	Karlidanga	Ditto	Ditto	200
282	Uttarkalapanja	Pingla	Bi-weekly	100
283	Ramgarh	Binpur	Weekly	200
284	Balarampur	Ditto	Ditto	200
285	Baita	Ditto	Ditto	200
286	Kendpara	Ditto	Ditto	200
287	Shipur	Egra	Bi-weekly	100
288	Kultikri	Ditto	Ditto	100
289	Chattri	Ditto	Ditto	100
290	Laskarpur	Ditto	Ditto	100
291	Bhabanichak	Ditto	Ditto	100
292	Kamarda	Khejri	Ditto	100
293	Gormal	Salboni	Weekly	200
294	Aritra	Kharagpur	Ditto	200
295	Anandpur	Keshpur	Ditto	200
296	Jokpur	Kharagpur	Ditto	200
297	Basantapur	Ditto	Bi-weekly	100
298	Bhadrakali	Narayangarh	Ditto	100
299	Rampur	Ditto	Weekly	200
300	Rangpur	Pingla	Bi-weekly	80
301	Sabajpur	Contai	Ditto	80
302	Kalai Kunda	Daspur	Ditto	80
303	Gopalpur	Contai	Ditto	75
304	Demuria	Ditto	Weekly	150
305	Angua	Jamboni	Ditto	150

Index No. on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
306	Chanpakali ..	Jhargram ..	Weekly ..	150
307	Alampur	Gopiballavpur ..	Ditto ..	150
308	Chaulbati	Ditto ..	Ditto ..	150
309	Gospur	Ditto ..	Ditto ..	150
310	Jara	Chandrakona ..	Daily ..	30
311	Karkai	Pingla ..	Weekly ..	150
312	Kalikakunda ..	Ditto ..	Ditto ..	150
313	Madhupur	Potaspur ..	Ditto ..	150
314	Bhimpur	Salboni ..	Ditto ..	150
315	Godapiasal ..	Ditto ..	Ditto ..	150
316	Keshpur	Keshpur ..	Ditto ..	150
317	Hartala	Ditto ..	Ditto ..	150
318	Aranga	Egra ..	Bi-weekly ..	70
319	Sarberia	Daspur ..	Ditto ..	70
320	Shijna	Salboni ..	Weekly ..	125
321	Shyamchandpur ..	Keshpur ..	Ditto ..	125
322	Biratpukur ..	Ditto ..	Ditto ..	125
323	Pinglash	Chandrakona ..	Bi-weekly ..	60
324	Basudebpur ..	Egra ..	Ditto ..	60
325	Tajpur	Contai ..	Ditto ..	60
326	Mangalpur	Ditto ..	Ditto ..	100
327	Thia	Ditto ..	Weekly ..	100
328	Dandabelbasi ..	Ditto ..	Ditto ..	100
329	Paschuni, Sarpai ..	Ditto ..	Bi-weekly ..	50
330	Teghari Kishnagar ..	Ditto ..	Weekly ..	100
331	Ninidasbar ..	Ditto ..	Bi-weekly ..	50
332	Chandanpur ..	Ditto ..	Ditto ..	50
333	Namal	Ditto ..	Weekly ..	100
334	Mukundpur ..	Ditto ..	Bi-weekly ..	50
335	Lahirganje	Chandrakona ..	Daily ..	20
336	Banpura	Gopiballavpur ..	Weekly ..	100
337	Gopinathpur ..	Pingla ..	Ditto ..	100
338	Jamna	Ditto ..	Bi-weekly ..	50
339	Saharda	Egra ..	Ditto ..	50
340	Gopalpur	Potaspur ..	Ditto ..	50
341	Bajitpur	Ditto ..	Ditto ..	50
342	Maksampur ..	Ditto ..	Weekly ..	100
343	Tarat	Ditto ..	Bi-weekly ..	50
344	Mathura	Ditto ..	Ditto ..	50
345	Dhalpora	Keshpur ..	Weekly ..	100
346	Kansideb	Jamboni ..	Ditto ..	100
347	Western Masuria ..	Bhagawanpur ..	Ditto ..	100
348	Jaligopinathpur ..	Ditto ..	Ditto ..	100
349	Kaylanpur	Sabang ..	Ditto ..	100
350	Utpata	Pingla ..	Ditto ..	100
351	Baitahat	Mohonpur ..	Ditto ..	100
352	Tallagicha	Kharagpur ..	Ditto ..	100
353	Kotai	Narayangarh ..	Ditto ..	100
354	Koshba	Ditto ..	Ditto ..	100
355	Bardai	Ditto ..	Bi-weekly ..	50
356	Khurshi	Ditto ..	Ditto ..	50
357	Chakhazalpur ..	Contai ..	Ditto ..	Not known.
358	Gopiganj	Daspur ..	Ditto ..	Ditto.
359	Aguria	Ditto ..	Ditto ..	Ditto.
360	Bural	Sabang ..	Weekly ..	Ditto.
361	Amkola Cattlehat ..	Danton ..	Ditto ..	Ditto.
362	Palasi	Ditto ..	Ditto ..	Ditto.

PART II—MELAS.

Index No. on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
1	Purbo Dakhin-moyna.	Moyna ..	February-March	7	10,000
2	Kanasole ..	Keshpur ..	March-April ..	7	7,000
3	Mahishadal Rath	Mahishadal ..	July ..	8	5,000
4	Deulia ..	Panskura ..	September ..	4	10,000
5	Khadalgobra ..	Contai ..	April-May ..	12	3,000
6	Kishorenagore ..	Ditto ..	June-July ..	3	10,000
7	Demuria ..	Ditto ..	March-April ..	15	1,500
8	Gazina ..	Moyna ..	January-February	5	4,000
9	Bhadrakali ..	Narayangarh ..	April ..	3	5,000
10	Egra ..	Egra ..	February-March	7	2,000
11	Bakshi ..	Contai ..	4 months a year, August to December.	120	100
12	Shyamsundarpur-Patna.	Panskura ..	December-January.	7	1,500
13	Raghunathbari ..	Ditto ..	September-October.	7	1,500
14	Biramput ..	Contai ..	December-January.	1	10,000
15	Kalanda ..	Sabang ..	....	..	10,000
16	Panchelgarh ..	Potaspur ..	November-December.	7	1,000
17	Bhagunda ..	Ditto ..	March-April ..	7	1,000
18	Balia ..	Midnapore ..	January-February	7	1,000
19	Deuli ..	Contai ..	October-November.	7	1,400
20	Kalindi ..	Ditto ..	January-February	7	1,200
21	Aligiri ..	Egra ..	November- .. December.	8	1,000
22	Matrapaikbar ..	Contai ..	August to December.	120	50
23	Gospur ..	Gopiballavpur ..	May-June ..	4	1,500
24	Simulia-Vimeswari	Bhagwanpur ..	Bi-weekly for 1 month in December-January.	..	700
25	Belebara ..	Gopiballavpur ..	November ..	5	1,000
26	Jhikra ..	Contai ..	October-November.	7	700
27	Dakshin Kacher-para.	Ditto ..	Thrice a year ..	15 (in the year).	300
28	Kudi ..	Egra ..	March-April ..	4	1,000
29	Maindinagar ..	Khejri ..	15th January ..	1	4,000
30	Andhoria ..	Kharagpur ..	January-February	2	2,000
31	Chattoveri ..	Contai ..	October-November.	12	300
32	Dakhin Chow-mukh.	Egra ..	15th January ..	7	500
33	Gidhi ..	Jamboni ..	October-November.	1	3,500
34	Blutia ..	Kharagpur ..	January-February	7	500
35	Basantia ..	Contai ..	October-November.	5	600
36	Palas Chabri Ghat	Chandrakona ..	February-March	5	600
37	Dantan ..	Dantan ..	July ..	1	3,000
38	Shipur ..	Egra ..	April ..	3	1,000
39	Durmat ..	Contai ..	Bi-weekly for a month in April-May.	..	400
40	Kushmori ..	Narayangarh ..	September-October.	4	700
41	Kandarpapur ..	Contai ..	February-March	7	400
42	Islampur ..	Ditto ..	April-May ..	7	400

Index No. on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
43	Thakurnagar ..	Bhagwanpur ..	February-March	30	100
44	Krishnanagar ..	Ditto ..	February-March	1	3,000
45	Tamluk ..	Panskura ..	March-April ..	1	3,000
46	Paniparul ..	Egra ..	March-April ..	3	1,000
47	Bodhna ..	Contai ..	December-January.	5	500
48	Rohini ..	Gopiballavpur ..	September-October.	5	500
49	Dubda ..	Egra ..	October-November.	5	500
50	Dihi Mukundapur	Contai ..	October-November.	12	200
51	Deulbar ..	Ditto ..	October-November.	12	200
52	Durgapur ..	Ditto ..	15th January ..	1	2,000
53	Baravankura ..	Ditto ..	June-July ..	2	1,000
54	Barabhuyagarh	Ditto ..	September-October.	4	500
55	Darna ..	Ditto ..	April-May ..	1	2,000
56	Darna ..	Ditto ..	June-July, January-February.	1	1,000
57	Islampur ..	Ditto ..	March-April ..	1	2,000
58	Kalahat ..	Chandrakona ..	February-March	1	2,000
59	Kantapukur ..	Pingla ..	....	1	2,000
60	Denuria ..	Contai ..	June-July ..	2	1,000
61	Mohanpur ..	Mohanpur ..	July ..	1	2,000
62	Kanidighi ..	Contai ..	Bi-weekly for a month in April-May.	..	250
63	Itabera ..	Bhagawanpur ..	15th April	1	2,000
64	Chunpara ..	Khejri ..	Bi-weekly for a month in December-January.	..	250
65	Naradeut ..	Keshpur ..	15th January ..	3	700
66	Gholageria ..	Kharagpur ..	February-March,	1	2,000
67	Marisda ..	Contai ..	October-November.	12	150
68	Benijhi ..	Ditto ..	Bi-weekly for a month in February-March.	..	200
69	Seulibar ..	Ditto ..	Twice a year ..	11	150
70	Darna ..	Ditto ..	September-October.	8	200
71	Alipore ..	Ditto ..	October-November.	8	200
72	Sarpai ..	Ditto ..	Twice a year ..	5	300
73	Bahishai Patna ..	Ditto ..	15th January ..	1	1,500
74	Mukundapur ..	Ditto ..	September-October.	3	500
75	Tapsia ..	Gopiballavpur ..	June ..	5	300
76	Bindubahiri ..	Contai ..	September-October.	5	250
77	Bonpatra ..	Kharagpur ..	Thrice a year ..	..	400
78	Gospur ..	Gopiballavpur	February-March	..	1,200
79	Akdal ..	Ditto ..	June ..	2	600
80	Kotemukhba ..	Bhagawanpur ..	December-January.	1	1,250
81	Pautabi ..	Ditto ..	April-May ..	7	175

Index No. on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
82	Dumuria ..	Jamboni ..	January-February.	3	400
83	Chandpur beach	Contai ..	16th December ..	1	1,000
84	Korkoli ..	Ditto ..	February-March	1	1,000
85	Ditto ..	Ditto ..	March-April ..	1	1,000
86	Karboria ..	Gopiballavpur ..	15th April ..	1	1,000
87	Turka ..	Danton ..	July ..	1	1,000
88	Panchsole ..	Egra ..	January-February	2	500
89	Baradanga ..	Khejri ..	July ..	..	1,000
90	Manur ..	Panskura ..	15th April ..	1	1,000
91	Kalui Kunia ..	Kharagpur ..	August-September	1	1,000
92	Gopali ..	Ditto ..	January-February.	2	500
93	Dahijuri ..	Ditto ..	March-April ..	1	1,000
94	Chorchita ..	Gopiballavpur ..	15th April ..	1	1,025
95	Chandpur ..	Contai ..	May-June ..	3	300
96	Kultikri ..	Gopiballavpur	July ..	3	300
97	Abasbera ..	Bhagawanpur ..	February-March	2	450
98	Kendua ..	Jamboni ..	April-May ..	..	900
99	Ramkrishen Jat	Keshpur ..	15th January ..	3	300
100	Kuerda and Jamberia.	Gopiballavpur	July ..	1	800
101	Paktagole ..	Narayangarh ..	16th April ..	1	800
102	Ramkarapara ..	Contai ..	June-July ..	2	400
103	Bikramnagar ..	Bhagawanpur	....	15	50
104	Balda ..	Contai ..	March-April ..	2	350
105	Batila Kunda ..	Ditto ..	June-July and December-January.	2 in all.	350
106	Birbanda ..	Khejri ..	January-February	15	50
107	Dhalahara ..	Keshpur ..	15th April ..	3	250
108	Malancha ..	Kharagpur ..	June-July ..	..	700
109	Kusbari ..	Contai ..	April-May ..	1	600
110	Deulbar ..	Ditto ..	June-July ..	2	300
111	Muanati and Bankgachi.	Gopiballavpur ..	15th January ..	1	600
112	Kutuasole ..	Kharagpur ..	June-July ..	2	300
113	Kosh Narayangarh	Narayangarh ..	June-July and January-February.	..	300
114	Deuli ..	Ditto ..	15th January ..	1	600
115	Eastern Maluria	Bhagawanpur ..	March-April ..	1	550
116	Shekna ..	Kharagpur ..	15th April ..	1	500
117	Kotai ..	Narayangarh	April-May ..	1	500
118	Rampur ..	Ditto ..	April-May ..	1	500
119	Changwal	Kharagpur ..	....	..	500
120	Pania ..	Contai ..	June-July ..	1	500
121	Siria ..	Ditto ..	June-July ..	1	500
122	Namral ..	Ditto ..	June-July ..	1	500
123	Debra ..	Jamboni ..	March-April ..	..	400
124	Serkhachak ..	Khejri ..	February-March	..	400
125	Maidan ..	Ditto ..	15th January	1	400
126	Baudaria ..	Gopiballavpur	June ..	1	400
127	Sayadpur ..	Contai ..	June-July ..	2	200

Index No. on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
128	Bagpura ..	Contai ..	April-May ..	2	200
129	Karalda ..	Ditto ..	March-April ..	1	400
130	Madpur ..	Kharagpur ..	15th May ..	1	400
131	Kakrakhapi ..	Gopiballavpur ..	June-July ..	1	300
132	Elasai ..	Kharagpur ..	15th May ..	1	300
133	Ragra ..	Gopiballavpur ..	June ..	1	300
134	Andhari ..	Ditto ..	June ..	1	300
135	Thakurbari ..	Chandrakona ..	January ..	1	300
136	Sarsa ..	Gopiballavpur ..	June ..	1	300
137	Karbaria ..	Ditto ..	16th January ..	1	300
138	Bijoynagar ..	Bhagawanpur ..	March-April ..	1	..
139	Lankagarh ..	Daspur ..	March-April ..	4	..
140	Gobindanagar	Ditto ..	January-February.	..	..
141	Harirampur ..	Ditto ..	June-July ..	..	..
142	Sonakhali ..	Ditto ..	June-July and .. March-April.	..	..
143	Chaipat ..	Ditto ..	April ..	2	..
144	Karkoli ..	Contai ..	Thrice a week in June-July and August-September.	..	..

PART III -IMPORTANT HÂTS NOT INCLUDED IN PART I AS SUFFICIENT INFORMATION WAS NOT AVAILABLE TO PERMIT ARRANGEMENT IN ORDER OF IMPORTANCE.

Index No. on map.	Name of hât.	Thana in which located.	When held.
1	2	3	4
I ..	Dudkumra ..	Daspur ..	Bi-weekly.
II ..	Chandrakona ..	Chandrakona ..	Daily and bi-weekly.
III ..	Khirpai ..	Ditto ..	Bi-weekly.
IV ..	Garhbeta ..	Garhbeta ..	Ditto.
V ..	Amlasuli ..	Ditto ..	Ditto.
VI ..	Chandrakona road ..	Ditto ..	Ditto.
VII ..	Indahat ..	Khargpur ..	Ditto.
VIII ..	Tengrahat ..	Ditto ..	Ditto.
IX ..	Gole bazar ..	Ditto ..	Daily.
X ..	Balihai ..	Ramnagar ..	Bi-weekly.
XI ..	Baromail ..	Ditto ..	Ditto.
XII ..	Narghat ..	Nandigram ..	Ditto.

Appendix III.

Midnapore.

List of ferries arranged in order of importance with details of income, location and other particulars.

Index No.	Name of ferry.	Average annual income during 1930-35.	Road on which located.	Controlling authority of road.	Index No. of road.	Mile in which ferry is located.	Stream crossed.	Period for which ferry plies.	Depth of water during cold weather.	Width of river at ferry point.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
		Rs.							Ft.	Ft.	
1	Panskura ..	3,317	Orissa Trunk ..	C. and W. Dept.	..	..	Cossye ..	Whole year ..	4	2,000	
2	Narghat ..	3,120	Contai-Tamluk	District Board	38	54	Haldi ..	Ditto ..	7	1,200	Tidal river.
3	Petna ..	2,489	Sea Dyke to Petna Ferry Ghat.	Ditto ..	73	1	Rasulpur ..	Ditto ..	..	6,100	Tidal ferry plies on sea.
4	Kalinagar ..	1,850	Contai-Tamluk ..	Ditto ..	38	10	Ditto ..	Ditto ..	10	350	
5	Teropakhia ..	1,670	Teropakhia Ghat ..	....	..	1	Haldi	Ditto ..	10	4,100	
6	Pichaboni ..	1,617	Contai-Ramnagore	District Board	44	7	Sola Khal ..	Ditto ..	5	175	
7	Talpaty ..	1,132	....	....	..	..	Telpaty Khal	Ditto	8	180	
8	Rassulpore ..	1,027	Contai-Khedgri ..	District Board	43	10	Rassulpore ..	Ditto ..	10	870	
9	Kola Dewan ..	522	Orissa Trunk ..	C. and W. Dept.	..	..	Rupnarayan ..	Ditto ..	8	3,400	

10	Belmora Olmora	420	Dantan-Gopiballavpur.	District Board	49	4	Subarnarekha	July-October	2	2,050
11	Dherua ..	364	Lodhasye-Kupan Nadi.	Ditto ..	3	17	Cossye ..	Ditto ..	3	2,050
12	Munibgarh ..	230	Munibgarh Feeder	....	..	1	Ditto ..	Ditto ..	3	2,400
13	Chabukia ..	155	....	....	..	..	Kaliaghai ..	Ditto ..	3	180
14	Kankabati ..	153	Bombay ..	District Board	2	7	Cossye ..	Ditto ..	3	2,050
15	Mohapal ..	150	Lodhasole-Mohapal	Ditto ..	15	10	Subarnarekha	Ditto ..	3	3,500
16	Temohany ..	138	Burdwan ..	Ditto ..	5	17	Temohany ..	Ditto ..	3	300
17	Dolong Gopiballavpur.	93	Lodhasole-Mohapal	Ditto ..	15	6	Dolong ..	Ditto ..	3	400
18	Dolong Jhargram.	92	Bombay ..	Ditto ..	2	25	Ditto ..	Ditto ..	3	200
19	Dhadkia ..	67	Raniganj Trunk ..	C. and W. Dept.	..	..	Selye ..	Ditto ..	2	1,350
20	Narayanpur ..	63	Sagaria-Jhargram	District Board	13	2	Cossye ..	Ditto ..	3	3,400

Appendix IV.

Midnapore.

Statement showing particulars relating to railway within the district.

Serial No.	Name of railway.	Name of section.	Gauge.	Length within the district.	Number of stations.	Approximate statistics for the year ending March 1936.		
						Number of passengers coached.	Quantity of goods carried.	Gross receipts from all stations within the district.
1	2	3	4	5	6	7	8	9
			Ft. in.	Miles.	No.	No.	Tons.	Lakhs of rupees.
1	Bengal-Nagpur	Howrah-Kharagpur	5 6	38·00	12	1,874,709	193,640	22·96
2	Ditto	Kharagpur-Nagpur	5 6	37·00	4	219,251	66,130	
3	Ditto	Kharagpur-Adra	5 6	44·00	7	689,557	148,254	
4	Ditto ..	Kharagpur-Waltair	5 6	37·50	6	253,761	48,800	
		Total ..	..	156·50	29	3,037,278	456,824	22·96

Area of country for each mile of railway .. .. .. 3·00 sq. miles.

Appendix V.

Midnapore.

List of roads in Midnapore district, including Government roads and District roads showing total length of each item and allocation of same under the classification given below.

Class I—Metalled roads—
- A—Bridged and drained throughout.
- B—Partially bridged and drained.

Class II—Unmetalled roads—
- A—Bridged and drained throughout.
- B—Partially bridged and drained.

Class III—Roads of types inferior to I and II above.

NOTE.—Subdivisional roads, urban roads and village roads are not included in this list.

Index No.	Name of road.	From—	To—	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A	B	A	B		
1	2	3	4	5	6	7	8	9	10	11
	Government roads—									
1P	Orissa Trunk	....	....	77·00	77·00	..	..	..	..	
2P	Raniganj-Midnapore Trunk ..	....	....	36·50	36·50	..	..	..	..	
			Total ..	113·50	113·50					
	District Board roads—									
	Gope (near Midnapore station) ..	....	....	16·43	16·43	..	..	..	..	
1	Bombay	Midnapore ..	Dharisole ..	28·00	..	28·00	..	..	..	
2										
			Carried over ..	44·43	16·43	28·00				

Index No.	Name of road.	From—	To—	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A	B	A	B		
1	2	3	4	5	6	7	8	9	10	11
			Brought forward	44·43	16·43	28·00				
3	Lodhasye-Kupon Nadi ..	Lodhasye ..	Kupon Nadi ..	31·25	..	31·25	..	..	..	
4	Pilgrim	Midnapore ..	Natun Bazar ..	3·79	3·79	..	..	..	..	
5	Burdwan	Midnapore ..	Tarajuli Khal ..	21·12	..	21·12	..	..	..	
6	Kishorgaria-Chandrokona ..	Kishorgariah ..	Chandrokona ..	6·60	..	6·60	..	..	..	
7	Ghatal-Kossye River ..	Gohatal ..	Kossye River ..	51·71	..	51·71	..	..	..	
8	Gohaltor-Garhbeta	Gohaltor ..	Garhbeta ..	18·16	18·16	..	..	..	..	
9	Chandrakona-Amlagora ..	Chandrakona ..	Amlagora ..	16·74	16·74	..	..	..	..	
10	Janardanpur-Lachmanpur ..	Janardanpur ..	Lachmanpur ..	0·75	..	0·75	..	..	..	
11	Panskura-Tamluk	Panskura ..	Tamluk ..	18·07	18·07	..	..	..	..	
11a	Diversion Road round Tamluk ..	....	....	0·88	0·88	..	..	..	..	
12	Belda-Contai	Belda ..	Contai ..	35·80	..	35·80	..	..	..	
13	Saguria-Jhargram	Saguria ..	Jhargram ..	9·37	..	..	..	9·37	..	
14	Dahijuri-Lodhasuli	Dahijuri ..	Lodhasuli ..	13·00	13·00	..	..	..	..	
15	Lodhasole-Mohapal	Lodhasole ..	Mohapal ..	9·37	6·00	..	..	3·37	..	
16	Dahijuri Narainpur	Dahijuri ..	Narainpur ..	15·75	..	15·75	..	..	..	
17	Kaliband-Belpahari	Kaliband ..	Belpahari ..	10·00	..	10·00	..	..	..	
18	Belpahari-Tamajori	Belpahari ..	Tamajuri ..	7·00	..	..	..	7·00	..	
19	Belpahari-Shamnagore ..	Belpahari ..	Shamnagore ..	5·00	..	..	..	5·00	..	
20	Binpur-Sijuaghat ..	Binpur ..	Sijuaghat ..	6·78	..	3·00	..	3·78	..	
21	Dahijuri-Dharampur ..	Dahijuri ..	Dharampur ..	13·87	..	..	..	13·87	..	
22	Kalaberia-Kantapahari ..	Kalaberia ..	Kantapahari ..	21·50	..	19·00	..	2·50	..	
23	Pirakata-Gohaltor	Pirakata ..	Gohaltor ..	10·18	..	10·18	..	..	..	
24	Pingbani-Salbani ..	Pingbani ..	Salbani ..	4·15	..	4·15	..	..	..	
25	Amlagora-Koyapat	Amlagora ..	Koyapat ..	15·00	..	..	..	15·00	..	
26	Keshpur-Narajole	Keshpur ..	Narajole ..	11·00	..	..	..	11·00	..	
27	Addahat-Kalmijole	Addahat ..	Kalmijole ..	5·00	..	..	..	5·00	..	
28	Khirpai-Rongarkhal	Khirpai ..	Rongarkhal ..	11·00	..	..	..	11·00	..	
29	Sarsa-Ramjibanpore	Sarsa ..	Ramjibanpore ..	12·00	..	3·50	..	8·50	..	
30	Burda-Shamdeb	Burda ..	Shamdeb ..	10·00	4·00	..	..	6·00	..	

31	Ghatal-Bistopur	Ghatal ..	Bistopur ..	22·25	2·50	..	..	19·75	..
32	Baikuntapur-Rajnagar ..	Baikuntapur ..	Rajnagar ..	5·08	..	..	..	5·08	..
33	Berbulluvpur-Harishpur ..	Berbulluvpur ..	Harishpur ..	1·50	..	1·50	..	..	..
34	Godapiasal-Anandapur ..	Godapiasal ..	Anandapur ..	5·50	..	5·50	..	..	..
35	Ajubpur-Malancha	Ajubpur ..	Malancha ..	5·00	..	..	..	5·00	..
36	Khargpur-Kasiari	Khargpur ..	Kasiari ..	16·67	16·67	..	..	..	..
37	Debra-Sabang	Debra ..	Sabang ..	16·15	13·00	..	3·15	..	..
38	Tamluk-Contai	Tamluk ..	Contai ..	39·62	23·37	..	..	16·25	..
39	Tamluk-Bargoda ..	Tamluk ..	Bargoda ..	10·75	..	..	..	10·75	..
40	Nandakumer-Rathgora Bazar ..	Nandakumar ..	Rathgora Bazar	3·87	3·87	..	..	..	..
41	Mahisadal-Chaitanpur ..	Mahisadal ..	Chaitanpur ..	7·76	0·74	..	..	7·02	..
42	Balughata-Kukrahatty ..	Balughata ..	Kukrahatty ..	9·76	..	..	9·76	..	..
43	Contai-Khedgiri	Contai ..	Khedgiri ..	16·30	..	0·30	..	16·00	..
44	Contai-Ramnagore	Contai ..	Ramnagore ..	15·12	..	0·75	..	14·37	..
45	Balighai-Solpata	Balighai ..	Solpata ..	19·00	..	..	19·00	..	..
46	Egra-Bojool	Egra ..	Bojool ..	34·02	..	..	..	34·02	..
47	Contai-Junput	Contai ..	Junput ..	5·34	..	..	..	5·34	..
48	Nayagram-Palasmundi ..	Nayagram ..	Palasmundi ..	15·00	..	..	..	15·00	..
49	Danton-Gopiballavpur ..	Danton ..	Gopiballavpur ..	32·00	..	..	..	32·00	..
50	Kalomal-Ghora Thakuria ..	Kalomal ..	Ghora Thakuria	1·73	..	0·50	..	1·23	..
51	Panskura-Pratappur ..	Panshkura ..	Pratappur ..	0·91	0·91	..	..	..	..
52	Gidni Railway Station-Parihati ..	Gidni Railway Station.	Parihati ..	2·65	..	2·65	..	..	..
53	Danton Railway Station to Bazar	Danton Railway Station.	Danton Bazar ..	0·79	0·79	..	..	..	..
54	Sardiha Railway Station-Manickpara	Sardiha Railway Station.	Manickpara ..	0·94	0·94	..	..	..	..
55	Naraingarh Railway Station to Orissa Trunk.	....	....	0·37	0·37	..	..	..	..
56	Benapur Railway Station to Orissa Trunk.	....	....	0·37	0·37	..	..	..	..
57	Salboni Railway Station to Raniganj Trunk.	..	..	0·15	0·15	..	..	..	..
58	Godapiasal to Raniganj Trunk ..	..	..	0·43	0·43	..	..	..	..
59	Khargpur-Malancha	..	..	2·32	2·32	..	..	..	..
60	Gidni Railway Station-Chilkigarh		..	3·12	3·12	..	..	..	..
61	Belda-Kessiary	Belda ..	Kessiary ..	7·59	7·59	..	..	..	..
62	Mundumaree-Pingla	Mundumaree ..	Pigla ..	4·00	4·00	..	..	..	..
63	Garhbeta Railway Station to 3rd mile of Road No. 8.	..	..	0·26	0·26	..	..	..	..
			Carried over ..	745·47	178·59	252·01	31·91	283·20	..

Index No.	Name of road.	From—	To—	Total length in miles.	Details. Class I. A	Class I. B	Class II. A	Class II. B	Class III.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
			Brought forward	745·59	178·47	252·01	31·91	283·20	..	
64	Jhargram Station to Road No. 14	..	..	0·13	0·13	..	..	..	..	
65	Kolaghat Goods Station to Kolaghat Ferry.	..	..	0·43	0·43	..	..	..	..	
66	Bangachak Dooria	Bangachak ..	Dooria ..	10·55	..	..	10·55	..	..	
67	Chandrakona Railway Station to Raniganj Trunk.	....	....	0·05	0·05	..	..	..	..	
68	Lakata-Silda	Lakata ..	Silda ..	4·66	..	..	4·66	..	..	
69	Lalgarh-Dhansole	Lalgarh ..	Dhansole ..	2·67	..	2·67	..	..	..	
70	Banksole-Belaberia	Banksole ..	Belaberia ..	4·00	4·00	..	..	..	..	
71	Makrampur-Kotai	Makrampur ..	Kotai ..	4·28	..	..	..	4·28	..	
72	Raniganj-Garchkroberia ..	Raniganj ..	Garchkroberia ..	6·75	..	..	..	6·75	..	
73	Sea Dyke-Petua Ferry Ghat ..	Sea Dyke ..	Petua Ferry Ghat	0·37	..	..	0·37	..	..	
74	Contai Road Station to Orissa Trunk	..	..	0·06	0·06	..	..	..	..	
75	Ramnagore-Digha	Ramnagore ..	Digha ..	4·58	..	..	..	4·58	..	
76	Danton-Sarasanka ..	Danton ..	Sarasanka ..	2·00	..	..	2·00	..	..	
			Total ..	786·12	183·14	254·68	49·49	298·81	..	

Appendix VI.

Midnapore.

Statement making an analysis of waterway on railways and roads according to length of opening.

Serial No.	Index No.	Names of roads and sections of railways.	Miles.	A Existing bridges. 1 Up to 5'. No.	A 1 R. ft.	A 2 Above 5' up to 10'. No.	A 2 R. ft.	A 3 Total A_1+A_2. No.	A 3 R. ft.	A 4 Average per mile. No.	A 4 R. ft.
		Railways.									
1		Howrah-Kharagpur ..	37·0	37	66	12	78	49	144	1·8	3·9
2		Kharagpur-Adra ..	44·0	45	74	20	120	65	194	1·5	4·4
3		Kharagpur-Chakradharpur.	38·0	35	67	25	151	60	218	1·6	5·7
4		Kharagpur-Waltair ..	37·5	14	34	26	159	40	193	1 0	5·1
		Total ..	156·5	131	241	83	508	214	749	1·4	4·8
		Government roads.									
5	1P	Orissa Trunk ..	77·0	25	95	14	108	39	203	0·5	2·6
6	2P	Raniganj-Midnapur Trunk ..	36·5	54	190	18	136	72	326	1·9	8·8
		Total ..	113·5	79	285	32	244	111	529	1·0	4·7
		District Board roads.									
7	1	Gope ..	16·4	36	105	6	48	42	153	2·5	9·3
8	2	Bombay ..	28·0	15	54	4	34	19	88	0·7	3·1
9	3	Lodhasye-Kupannadi	31·2	38	106	11	81	49	187	1·5	6·0
10	4	Midnapore-Natunbazar	3·8	10	30	4	33	14	63	3·7	16·7
11	5	Burdwan ..	21·0	28	87	5	44	33	131	1·6	6·2
12	7	Ghatal-Cossya ..	51·7	36	101	13	105	49	206	2·0	8·5
13	8	Gohaltor-Garhbeta ..	18·2	28	90	20	140	48	230	2·6	7·7
14	9	Chandrakona-Amtagora	16·7	33	107	3	20	36	127	2·1	7·6
		Carried over ..	187·0	224	680	66	505	290	1,185		

Serial No.	Names of roads and sections of railways.	B Existing bridges. 1 Above 10' up to 25'. No.	B 1 R. ft.	B 2 Above 25' up to 50'. No.	B 2 R. ft.	B 3 Above 50' up to 75'. No.	B 3 R. ft.	B 4 Above 75' up to 100'. No.	B 4 R. ft.	B 5 Total B (1+2+3+4). No.	B 5 R. ft.	B 6 Average per mile. No.	B 6 R. ft.
	Railways.												
1	Howrah-Kharagpur ..	8	140	3	120	2	120	1	80	14	460	0·4	12·4
2	Kharagpur-Adra ..	10	180	5	192	2	120	1	80	18	572	0·4	13·0
3	Kharagpur-Chakradharpur.	16	234	3	120	1	60	3	240	23	654	0·6	17·2
4	Kharagpur-Waltair ..	21	308	3	120	2	120	1	80	27	628	0·7	16·5
	Total ..	55	862	14	552	7	420	6	480	82	2,314	0·5	14 8
	Government roads.												
5	Orissa Trunk ..	16	251	9	315	2	140	1	89	28	795	0·4	10·3
6	Raniganj-Midnapur Trunk ..	15	218	6	224	1	65	3	271	25	778	0·7	20·3
	Total ..	31	469	15	539	3	205	4	360	53	1,573	0·5	13 9
	District Board roads.												
7	Gope ..	2	31	..	..	..	..	..	..	2	31	0·1	1·9
8	Bombay ..	1	14	5	187	..	..	1	76	7	277	0·2	9·9
9	Lodhasye-Kupannadi	10	164	4	140	1	52	1	86	16	442	0·5	14·0
10	Midnapore-Natunbazar	..	..	..	..	..	..		..	..	..	..	..
11	Burdwan ..	2	35	2	75	4	243	..	..	8	353	0·4	16 7
12	Ghatal-Cossya ..	8	140	7	269	4	216	2	161	21	786	0·8	30·6
13	Gohaltor-Garhbeta ..	1	18	2	68	1	75	..	..	4	161	0·2	8·6
14	Chandrakona-Amtagora	..	..	Information not received						..	..	..	..
	Carried over ..	24	402	20	739	10	586	4	323	58	2,050		

Serial No.	Names of roads and sections of railways.	A+B Existing bridges. Total A_3+B_5. No.	A+B Total R. ft.	A+B Average per mile A_4+B_6. No.	A+B Average R. ft.	C Existing bridges. Above 100' up to 300'. No.	C Above 100' up to 300'. R. ft.	C Above 300'. R. ft.	Total. A_3+B_5 +C. R. ft.
	Railways.								
1	Howrah-Kharagpur ..	63	604	1·7	16·3	2	310	1,100	2,014
2	Kharagpur-Adra ..	83	766	1·9	17·4	4	680	2,260	3,706
3	Kharagpur-Chakradharpur.	83	872	2·2	22·9	2	360	..	1,232
4	Kharagpur-Waltair ..	67	821	1·7	21·6	6	1,300	..	2,121
	Total ..	296	3,063	1·9	19·6	14	2,650	3,360	9,073
	Government roads.								
5	Orissa Trunk ..	67	998	0·9	12·9	2	260	..	1,258
6	Raniganj-Midnapur Trunk ..	97	1,104	2·6	29·1	1	144	..	1,248
	Total ..	164	2,102	1·5	18 6	3	404	.	2,506
	District Board roads.								
7	Gope ..	44	184	2·6	10·2	..	..	.	184
8	Bombay ..	26	365	0·9	13·0	..	..	.	365
9	Lodhasye-Kupannadi	65	629	2·1	20·0	2	241	.	870
10	Midnapore-Natunbazar	14	63	3·7	16 7	..	..	..	63
11	Burdwan ..	41	484	1·9	22·9	..	..	..	484
12	Ghatal-Cossya ..	70	992	2·8	39·1	2	291	..	1,283
13	Gohaltor-Garhbeta ..	52	391	2·8	16 3	..	..		391
14	Chandrakona-Amtagora	36	127	2·1	7·6	..	..	..	127
	Carried over ..	348	3,235			4	532	..	3,767

Serial No.	Index No.	Names of roads and sections of railways.	Miles.	A Existing bridges. 1 Up to 5'.		2 Above 5' up to 10'.		3 Total A_1+A_2.		4 Average per mile.		B Existing bridges. 1 Above 10' up to 25'.		2 Above 25' up to 50'.		3 Above 50' up to 75'.		4 Above 75' up to 100'.		5 Total B (1+2+3+4).		6 Average per mile.		A+B Existing bridges. Total A_3+B_5.		Average per mile A_4+B_6.		C Existing bridges. Above 100' up to 300'.		Above 300'.	Total. A_3+B_5+C.
				No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	R. ft.	R. ft.
		Brought forward ..	187·0	224	680	66	505	290	1,185			24	402	20	739	10	586	4	323	58	2,050			346	3,235			4	532		3,767
15	12	Belda-Contai ..	35·8	34	118	11	101	45	219	13·2	6·5	6	101	1	48	..	..	..	..	7	149	0·2	4·2	52	369	13·4	10·7	..	..	..	368
16	14	Dahijuri-Lodhasuli ..	13·0	21	59	6	52	27	111	2·1	8·5	1	11	..	..	..	..	1	99	2	110	1·5	8·4	29	221	3·6	16·9	..	..	..	221
17	15	Lodhasol-Mahapal ..	9·4	11	50	8	45	19	95	2·0	10·0	1	16	..	..	..	..	..	..	1	16	0·1	1·0	20	111	2·1	11·0	..	..	..	111
18	16	Dahijuri-Narayanpur	15·7	44	85	4	37	48	122	3·1	7·7	7	103	1	31	2	127	..	..	10	261	0 6	16·6	58	383	3·7	24·3	..	..	..	383
19	17	Kalibund-Belpahari	10·0	18	40	1	10	19	50	1·9	5·0	1	14	..	..	..	..	..	..	1	14	0·1	1·4	20	64	2·0	6·4	..	..	..	64
20	18	Belpahari-Tamajori ..	7·0	2	6	1	8	3	14	0·4	2·0			Information not received										3	14	0·4	2·0	..	..	..	14
21	20	Binpur-Silnaghat ..	6·8	4	6	2	20	6	26	0·9	3·9	1	15	..	..	..	..	..	..	1	15	0·1	2·2	7	41	1·0	6·1	..	..	..	41
22	21	Dahijuri-Dharampur	13·9	10	27	..	..	10	27	0·7	2·0			Information not received										10	27	0·7	2·0	..	..	..	27
23	22	Kalaberia-Kantapahari	21·5	17	41	16	128	33	169	1·5	7·8			Information not received										33	169	1·5	7·7	..	..	..	169
24	24	Pingbari-Salboni ..	4·1	..	..	3	19	3	19	0·7	4·6	..	..	2	75	..	..	..	..	2	75	0·5	18·1	5	94	1·2	22·7	..	..	..	94
25	30	Barda-Shamdeb ..	10·0	10	33	6	44	16	77	1·6	7·7	1	22	1	47	..	..	..	..	2	69	0·2	6·9	18	146	1·8	8·5	..	..	..	146
26	33	Birballabhpur-Harispur ..	1·5	12	27	..	..	12	27	8·0	17·8	..	..	..	..	..	..	..	..	..	..	..	..	12	27	8·0	17·8	..	..	..	27
27	34	Godapiasal-Anandpur	5·5	5	10	2	18	7	28	1·3	5·1	..	..	..	..	..	..	..	..	..	..	..	..	7	28	1·3	5·1	..	..	..	28
28	36	Kharagpur-Kasiari ..	16·7	11	28	7	53	18	81	1·1	4·8			Information not received										18	81	1·1	4·8	..	..	..	81
29	38	Tamluk-Contai ..	30·6	14	45	12	83	26	128	0·6	3·2	3	46	..	..	..	..	..	..	3	46	0·1	1·1	29	174	0·7	4·3	..	..	..	174
30	40	Nandakumar-Rathgorabazar ..	3·9	4	10	1	7	5	17	1·3	4·7	1	13	..	..	..	..	..	..	1	13	0·2	3·5	6	30	1·5	8·2	..	..	..	30
31	42	Belughata-Kukrahaty	9·7	9	31	2	17	11	48	1·1	4·9			Information not received										11	48	1·1	4·9	..	..	..	48
32	43	Contai-Khedgiri ..	15·1	7	26	3	18	10	44	0·6	2·9			Information not received										10	44	0·6	2·9	..	..	..	44
33	44	Contai-Ramnagar ..	16·3	15	43	5	38	20	81	1·2	5·0	1	11	..	..	..	..	1	78	2	89	0·1	5·5	22	170	1·3	10·5	..	..	..	170
34	46	Balighai-Solepotta ..	19·0	1	5	14	119	15	124	0·8	6·5	3	48	4	170	1	60	2	160	10	438	0·5	23·0	25	562	1·3	29·5	..	..	..	562
35	47	Contai-Junput ..	5·3	6	18	..	..	6	18	1·1	3·4	..	..	1	31	..	..	..	..	1	31	0·2	5·2	7	49	1·3	9·2	..	..	..	49
36	50	Kalamaighora-Thakurja ..	1·7	5	8	2	30	7	38	4·0	22·4	..	..	..	..	..	..	..	..	..	..	..	..	7	38	4·0	22·4	..	..	..	38
37	52	Gidni-Parihati ..	2·6	9	16	..	..	9	16	3·4	6·2	1	16	..	..	..	..	..	..	1	16	0·4	6·0	10	32	3·8	12·3	..	..	..	32

38	[illegible]	Danton-Danton Bazar	0·8	1	3	1	6	2	9	2·5	11·4	..	..	..	..	..	..	..	..	..	..	..	..	2	9	2·5	11·4	..	..	..	9
39	54	[illegible]-Manikpara ..	0·9	2	5	..	..	2	5	2·1	5·3	..	..	..	..	..	..	..	..	..	..	..	..	2	5	2·1	5·3	..	..	..	5
40	55	Narayangarh-Orissa Trunk ..	0·4	1	3	..	..	1	3	2·8	8·3	..	..	..	..	..	..	..	..	..	..	..	..	1	3	2·8	8·3	..	..	..	3
41	56	Benapur-Orissa Trunk	0·4	1	2	..	..	1	2	2·8	5·6	..	..	..	..	..	..	..	..	..	..	..	..	1	2	2·8	5·6	..	..	..	2
42	58	Godapiasal-Raniganj Trunk ..	0·4	2	4	1	10	3	14	6·8	32·8	..	..	..	..	..	..	..	..	..	..	..	..	3	14	6·8	32·8	..	..	..	14
43	60	Gidni-Chilkigarh ..	3·1	14	30	2	12	16	42	5·1	13·4	..	..	..	..	..	..	..	..	..	..	..	..	16	42	5·1	13·4	..	..	..	42
44	61	Belda-Kesiari ..	7·6	6	17	2	20	8	37	1·0	4·9	..	..	..	..	2	115	..	..	2	115	0·3	15·1	10	152	1·3	20·0	..	..	..	152
45	68	Lakata-Sildah ..	4·6	5	14	5	47	10	61	2·1	13·2	2	40	..	..	..	..	..	..	2	40	0·4	8·6	12	101	2·6	21·8	..	..	..	101
46	69	Lalgarh-Dhansole ..	2·7	2	8	1	7	3	15	1·1	5·6	..	..	..	..	..	..	1	87	1	87	0·4	32·6	4	102	1·5	38·2	..	..	..	102
47	70	Banksole-Belabaria ..	4·0	4	14	1	5	5	19	1·2	4·8	..	..	1	40	..	..	..	..	1	40	0·2	10·0	6	59	1·5	14·8	..	..	..	59
48	72	Raniganj-Gareh Koberia ..	6·7	4	11	1	8	5	19	0·7	2·8	..	..	..	..	..	..	..	..	..	..	..	..	5	19	0·7	2·8	..	..	..	19
49	74	Contai Road Station to Orissa Trunk ..	0·1	1	1	1	10	2	11	33·3	183·3	..	..	..	..	..	..	..	..	..	..	..	..	2	11	33·3	183·3	..	..	..	11
50	75	Ramnagore-Digha ..	4·6	6	18	1	8	7	26	1·5	5·8	..	..	..	..	..	..	..	..	..	..	..	..	7	26	1·5	5·8	..	..	..	26
		Total ..	507·4	542	1,542	188	1,485	760	3,027	1·4	6·0	53	858	31	1,181	15	888	9	747	108	3,674	0·2	7·2	838	6,701	1·6	13·2	4	532	..	7,238
		Grand Total ..	777·4	752	2,068	303	2,237	1,055	4,305	1·4	5·5	139	2,189	60	2,272	25	1,513	19	1,587	243	7,561	0·3	9·7	1,298	11,866	1·7	15·2	21	3,586	3,360	18,812

Appendix VII.

Traffic Census in Midnapore district.

(1) Location of observation—Mile 25·75 (Panskura).
(2) Index No. and name of road—No. 1P. Orissa Trunk Road.
(3) Supervising officer—Babu Abhoy Charan Mookherjee, Overseer.
(4) Nature of road surface—Laterite stone-metalled.
(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.
(6) Average weight in tons of all traffic in 24 hours—83·33 tons.

Day—6 a.m. to 6 p.m. Night—6 p.m. to 6 a.m.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	4	..	..	..	3	..	22	1	..	..	..	..	33	31	17	32	197	20	1,475	160	24	2
19th November	..	..	..	..	..	..	2	3	..	..	..	..	7	4	10	32	155	18	657	137	124	4
20th November	..	..	..	..	..	..	..	1	..	..	..	..	13	17	17	16	196	36	804	184	25	..
21st November	..	..	..	..	..	..	9	..	..	..	..	..	9	12	7	3	104	21	692	115	17	421
22nd November	..	..	..	..	2	..	5	1	..	..	..	..	32	53	6	28	182	27	1,430	151	17	3
23rd November	..	..	..	..	..	..	2	2	..	..	..	..	27	21	23	32	127	30	685	302	32	3
24th November	..	..	..	..	..	..	1	1	1	..	..	..	6	23	10	55	170	20	1,005	233	42	..
Total ..	4	..	..	..	5	..	41	9	1	..	..	..	127	161	90	198	1,131	172	6,748	1,282	281	433
Total—Day and night ..	4		..		5		50		1		..		288		288		1,303		8,030		714	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	14·00 tons		..		12·50 tons		37·50 tons		0·20 tons		..		316·80 tons		72·00 tons		130·30 tons					

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	64·20
Average weight per day of 24 hours	..	..	..	9·17
Weight per foot width of metalled track	..	..	..	1·15

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	519·10
Average weight per day of 24 hours	..	..	74·16
Weight per foot width of metalled track	..	..	9·27

Total weight of all traffic in seven days—583·30 tons.

(1) Location of observation—Mile 25·75 (Panskura).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Abhoy Chandra Mookherjee.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—278·45 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
17th January	..	..	1	..	1	1	4	3	..	..	..	..	52	31	26	25	181	5	1,306	57	12	..
18th January	..	..	..	..	2	..	5	..	..	..	..	..	37	66	33	60	160	16	577	115	5	..
19th January	..	..	..	..	2	..	7	4	5	..	..	..	102	30	100	29	217	20	640	100	6	..
20th January	..	..	..	..	10	1	16	3	2	..	1	..	47	105	40	68	246	27	140	105	9	..
21st January	..	..	..	..	8	..	19	..	..	..	..	..	55	213	36	184	308	30	955	179	207	..
22nd January	..	..	..	..	2	2	9	4	1	..	..	..	175	166	194	161	280	15	1,213	236	31	15
23rd January	..	..	..	..	2	1	3	..	..	..	2	..	96	59	82	58	244	16	965	114	36	..
Total ..	..	..	1	..	27	5	63	14	8	..	3	..	546	670	511	585	1,636	129	5,796	936	306	15
Total—Day and night ..	..		1		32		77		8		3		1,234		1,096		1,765		6,732		321	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		1·00 tons		80·00 tons		57·75 tons		1·60 tons		0·90 tons		1,357·40 tons		274·00 tons		176·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	140·35
Average weight per day of 24 hours	.. .. ..	20·05
Weight per foot width of metalled track	.. .. ..	2·50

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,808·80
Average weight per day of 24 hours	.. ..	258·40
Weight per foot width of metalled track	.. ..	32·30

Total weight of all traffic in seven days—1,949·15 tons.

(1) Location of observation—Mile 15·62 (Debra).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Abhoy Charan Mookherjee.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—134·59 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
19th November	..	..	..	..	4	2	7	..	..	..	..	..	31	27	30	25	81	4	456	123	25	..
20th November	..	..	..	..	4	4	7	3	..	..	..	..	47	13	25	36	105	11	490	144	33	..
21st November	..	..	..	..	4	2	8	3	..	..	..	..	25	31	30	29	84	12	506	142	71	2
22nd November	..	..	..	..	4	1	3	1	..	..	..	..	32	70	33	29	91	5	440	107	38	3
23rd November	..	..	..	..	3	1	..	..	..	..	..	..	56	28	52	34	105	16	372	160	32	..
24th November	..	..	..	..	3	1	1	..	2	..	..	..	42	61	61	43	87	12	346	107	35	2
25th November	..	..	..	..	4	2	..	1	..	..	..	..	45	49	68	35	112	10	1,386	284	37	1
Total ..	..	..	..	..	26	13	26	8	2	..	..	..	278	279	299	231	665	70	3,996	1,067	271	8
Total—Day and night ..	..		..		39		34		2		..		557		530		735		5,063		279	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		97·50 tons		25·50 tons		0·40 ton		..		612·70 tons		132·50 tons		73·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	123·40
Average weight per day of 24 hours	.. .. ..	17·63
Weight per foot width of metalled track	.. .. ..	2·20

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	818·70
Average weight per day of 24 hours	.. ..	116·96
Weight per foot width of metalled track	.. ..	14·62

Total weight of all traffic in seven days—942·10 tons.

(1) Location of observation—Mile 15·62 (Debra).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Abhoy Chandra Mookherjee, Overseer.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—426·74 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th January	..	..	..	..	4	2	7	..	..	..	..	..	280	126	295	96	166	18	649	192	222	1
25th January	..	..	..	..	24	2	18	..	..	..	..	..	146	141	79	87	113	3	642	173	72	..
26th January	..	..	..	..	10	2	6	1	..	..	..	..	86	144	56	76	83	15	686	162	19	1
27th January	..	..	..	..	8	1	5	..	..	..	..	..	99	229	59	136	72	17	1,521	211	93	1
28th January	..	..	..	..	10	..	1	..	..	..	..	..	78	156	59	105	63	13	615	130	45	..
29th January	..	..	..	..	10	2	6	..	..	..	..	..	124	205	80	72	86	10	595	166	26	15
30th January	..	..	..	..	12	1	5	..	..	..	1	..	126	146	95	145	89	7	569	158	31	..
Total ..	..	..	..	..	78	10	48	1	..	..	1	..	939	1,147	723	717	672	83	5.277	1,192	508	18
Total—Day and night ..	..		..		88		49		..		1		2,086		1,440		755		6,469		526	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		220 00 ton		36·75 tons		..		0 30 tons		2,294·60 tons		360·00 tons		75·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	256·75
Average weight per day of 24 hours	.. .. ..	36·68
Weight per foot width of metalled track	.. .. ..	4 59

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	2,730·40
Average weight per day of 24 hours	.. ..	390·06
Weight per foot width of metalled track	.. ..	48·76

Total weight of all traffic in seven days—2,987 15 tons.

(1) Location of observation—Mile 1·25 (Keshabpur).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road (towards Kola).

(3) Supervising officer—Mr. Jinnatali, Overseer, Public Works Department.

(4) Nature of road surface—Metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—62·09 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	..	..	..	..	2	..	2	..	..	..	..	1	30	17	9	6	61	4	606	66	190	..
19th November	..	..	..	..	2	..	2	..	..	..	2	..	19	8	17	2	69	3	606	76	103	3
20th November	..	..	..	..	2	..	1	1	..	..	2	..	42	8	39	3	67	12	881	57	86	..
21st November	..	..	..	..	4	1	5	1	..	..	3	1	24	18	15	8	76	5	722	69	135	..
22nd November	..	..	..	..	1	..	2	1	..	..	..	..	14	5	29	12	53	5	628	39	135	..
23rd November	..	..	..	..	..	..	..	..	..	..	1	1	30	..	37	6	80	7	629	89	81	2
24th November	..	..	..	..	..	..	1	..	1	..	1	..	23	21	25	9	49	6	732	92	206	2
Total ..	..	..	..	..	11	1	13	3	1	..	9	3	182	77	171	46	455	42	4,804	488	936	7
Total—Day and night ..	..		..		12		16		1		12		259		217		497		5,292		943	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		30·00 tons		12·00 tons		0·20 ton		3·60 tons		284·90 tons		54·25 tons		49·70 tons					

Motor traffic		Tons.
Total weight in seven days	.. .. ..	42·20
Average weight per day of 24 hours	.. .. ..	6·03
Weight per foot width of metalled track	.. .. ..	0·75

Non-motor traffic		Tons.
Total weight in seven days	.. ..	392·45
Average weight per day of 24 hours	.. ..	56·06
Weight per foot width of metalled track	.. ..	7·01

Total weight of all traffic in seven days—434·65 tons.

(1) Location of observation—Mile 1·25 (Keshabpur).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road (towards Kola).

(3) Supervising officer—Mr. Jinnatali, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24″ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—149·70 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th January	..	..	..	..	6	1	6	6	..	..	5	..	40	24	22	19	64	1	630	71	60	..
16th January	..	..	..	..	8	..	12	4	..	..	4	4	48	36	31	7	69	7	590	48	79	..
17th January	1	..	..	..	6	..	10	3	..	..	..	..	51	22	31	18	67	16	585	53	26	..
18th January	..	..	..	..	7		2	2	..	..	..	..	43	30	24	22	86	5	690	40	73	1
19th January	..	..	..	..	6	..	7	1	..	..	..	..	81	62	31	14	72	9	712	77	93	47
20th January	..	..	..	..	4	..	11	2	..	..	2	2	39	43	32	71	88	4	744	51	185	2
21st January	..	..	..	..	9	..	32	6	..	..	..	..	84	28	27	23	74	5	676	70	80	1
Total ..	1	..	..	..	46	1	80	24	..	..	11	6	386	245	198	174	520	47	4,627	410	596	51
Total—Day and night ..	1		..		47		104		..		17		631		372		567		5,037		647	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	3·50 tons		..		117·50 tons		78·00 tons		..		5·10 tons		694·10 tons		93·00 tons		56·70 tons					

Motor traffic	Tons.
Total weight in seven days	199·00
Average weight per day of 24 hours	28·43
Weight per foot width of metalled track	3·55

Non-motor traffic	Tons.
Total weight in seven days	848·90
Average weight per day of 24 hours	121·27
Weight per foot width of metalled track	15·16

Total weight of all traffic in seven days—1,047·90 tons.

(1) Location of observation—Mile 5·75 (Khargpur).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Panchanan Maity, Overseer, Public Works Department.

(4) Nature of road surface— Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—323·47 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycle.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	3	..	3	..	8	1	22	6	1	..	13	1	135	11	70	6	540	113	772	188	433	38
19th November	3	..	2	..	13	..	14	5	..	2	18	3	101	36	75	9	515	181	832	297	489	18
20th November	5	..	5	..	15	2	23	3	4	..	25	24	89	26	64	21	553	146	1,054	263	474	47
21st November	6	..	3	..	16	..	28	10	6	3	14	9	137	76	121	9	553	147	1,083	358	454	53
22nd November	3	..	4	..	10	..	16	8	5	3	10	8	165	26	112	43	616	265	1,135	351	244	105
23rd November	5	..	2	..	9	..	25	8	4	1	14	7	40	21	64	44	464	102	836	317	330	67
24th November	4	..	1	..	9	2	28	5	1	..	10	3	93	16	85	24	409	95	673	181	308	63
Total ..	29	..	20	..	80	5	156	45	21	9	104	55	760	212	591	156	3,650	1,049	6,385	1,955	2,732	391
Total—Day and night ..	29		20		85		201		30		159		972		747		4,699		8,340		3,123	
	At 3·5 tons 101·50 tons		At 1 ton 20·00 tons		At 2·5 tons 212·50 tons		At ·75 ton 150·75 tons		At ·20 ton 6·00 tons		At ·3 ton 47·70 tons		At 1·1 tons 1,069·20 tons		At ·25 ton 186·75 tons		At ·1 ton 469·90 tons					

Motor traffic:

		Tons.
Total weight in seven days	..	490·75
Average weight per day of 24 hours	..	70·11
Weight per foot width of metalled track	..	8·77

Non-motor traffic:

		Tons.
Total weight in seven days	..	1,773·55
Average weight per day of 24 hours	..	253·36
Weight per foot width of metalled track	..	31·67

Total weight of all traffic in seven days—2,264·30 tons.

(1) Location of observation—Mile 5·75 (Khargpur).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Panchanan Maity.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—457·32 tons.

Date.	Motor traffic.										Non-motor traffic.										
	Lorries.				Buses.		Cars and taxis.		Motor cycle.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd January	6	1	5	2	16	1	32	5	11	4	23	1	152	41	68	22	719	143	592	295	83	27
23rd January	8	..	4	..	13	1	44	10	3	1	14	3	136	122	94	12	593	134	660	228	212	15
24th January	9	1	1	..	19	1	49	10	12	2	13	3	149	14	93	42	591	164	637	321	217	34
25th January	4	..	6	..	15	1	15	9	1	..	7	6	166	23	101	49	574	213	449	297	108	25
26th January	11	..	6	..	16	5	24	9	4	..	12	2	201	38	136	26	535	167	593	153	320	25
27th January	4	1	6	5	15	9	13	1	1	8	12	32	192	37	103	24	494	233	202	247	200	50
28th January	13	..	7	..	11	4	19	12	2	..	2	15	185	41	127	36	402	203	513	178	163	124
Total ..	55	3	35	7	105	22	196	56	34	15	83	62	1,181	316	722	211	3,908	1,257	3,736	1,719	1,303	300
Total—Day and night ..	58		42		127		252		49		145		1,497		933		5,165		5,455		1,603	
	At 3·5 tons 203·00 tons		At 1 ton 42·00 tons		At 2·5 tons 317·50 tons		At ·75 ton 189·00 tons		At ·20 ton 9·80 tons		At ·3 ton 43·50 tons		At 1·1 tons 1,646·70 tons		At ·25 ton 233·25 tons		At ·1 ton 516·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	761·30
Average weight per day of 24 hours	.. ..	108·76
Weight per foot width of metalled track	.. ..	13·60

Non-motor traffic:

		Tons.
Total weight in seven days	..	2,439·95
Average weight per day of 24 hours	..	348·56
Weight per foot width of metalled track	..	43·57

Total weight of all traffic in seven days—3,201·25 tons.

(1) Location of observation—Mile 25·75 (Belda).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Panchanan Maity, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—456·02 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycle.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	..	3	..	2	36	26	8	2	..	..	..	..	60	71	42	47	122	31	1,954	674	216	16
19th November	1	..	1	..	31	6	6	1	..	..	..	..	82	118	71	60	100	49	1,213	570	160	28
20th November	..	..	..	1	42	16	2	..	..	..	..	..	175	81	97	25	112	22	2,078	424	182	..
21st November	1	1	..	..	32	14	5	..	..	..	..	..	163	245	149	139	127	32	2,344	686	317	26
22nd November	..	..	..	..	24	8	4	1	..	..	..	..	104	299	92	84	113	24	1,615	577	302	68
23rd November	2	..	2	..	28	14	4	2	..	..	..	..	78	92	64	81	124	32	1,256	512	167	..
24th November	1	..	1	..	31	13	8	1	..	..	..	..	64	131	120	48	98	5	1,390	317	191	17
Total ..	5	4	4	3	224	97	37	7	..	..	..	..	726	1,037	635	484	796	195	11,850	3,760	1,535	155
Total—Day and night ..	9		7		321		44		..		..		1,763		1,119		991		15,610		1,690	
	At 3·5 tons 31·50 tons		At 1 ton 7·00 tons		At 2·5 tons 802·50 tons		At ·75 ton 33·00 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 1,939·30 tons		At ·25 ton 279·75 tons		At ·1 ton 99·10 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	874·00
Average weight per day of 24 hours	.. .. ..	124·86
Weight per foot width of metalled track	.. .. ..	15·61

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	2,318·15
Average weight per day of 24 hours	.. ..	331·16
Weight per foot width of metalled track	.. ..	41·40

Total weight of all traffic in seven days—3,192·15 tons.

(1) Location of observation—Mile 25·75 (Belda).

(2) Index No. and name of road—No. 1P. Orissa Trunk Road.

(3) Supervising officer—Babu Panchanan Maity, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—582·92 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
	Loaded.		Unloaded.										Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.																								
31st January	1	..	1	..	44	9	9	4	..	..	..	..	172	373	146	297	170	45	916	492	88	63		
1st February	1	..	1	2	41	9	4	3	..	..	..	..	184	157	130	132	109	25	784	339	45	21		
2nd February	..	..	..	..	36	14	6	..	..	..	..	..	147	25	154	12	116	15	894	205	63	8		
3rd February	..	..	..	..	38	18	5	..	..	..	..	..	164	116	183	75	118	45	683	271	45	9		
4th February	1	..	1	..	40	14	5	1	1	..	..	..	182	70	139	70	109	34	629	267	84	12		
5th February	2	1	6	3	39	8	8	2	..	2	..	..	166	57	92	59	102	18	890	237	46	4		
6th February	..	..	..	..	37	16	3	..	1	..	..	..	260	271	146	30	132	12	960	515	64	7		
Total ..	5	1	9	5	275	88	40	10	2	2	..	..	1,275	1,069	990	675	856	194	5,756	2,326	435	127		
Total—Day and night ..	6		14		363		50		4		..		2,344		1,665		1,050		8,082		562			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	21·00 tons		14·00 tons		907·50 tons		37·50 tons		0·80 ton		..		2,578·40 tons		416·25 tons		105·00 tons							

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	980·80
Average weight per day of 24 hours	.. .. ..	140·11
Weight per foot width of metalled track	.. .. ..	17·51

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	3,099·65
Average weight per day of 24 hours	.. ..	442·81
Weight per foot width of metalled track	.. ..	55·35

Total weight of all traffic in seven days—4,080·45 tons.

(1) Location of observation—Mile 63·61 (Garhbeta).

(2) Index No. and name of road—No. 2P. Raniganj-Midnapore Road.

(3) Supervising officer—Babu R. M. Chatterjee, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—25′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—234·01 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	..	1	..	..	4	3	1	1	..	..	1	..	103	54	82	34	295	35	4,069	1,140	242	1
19th November	..	..	..	..	10	1	5	2	..	..	..	..	64	7	40	34	384	15	4,999	2,224	247	..
20th November	..	..	..	..	5	2	..	..	..	..	..	..	94	40	59	20	376	13	5,739	746	312	4
21st November	..	..	..	..	6	2	..	..	..	..	..	..	163	64	72	18	474	20	4,745	565	227	2
22nd November	..	..	..	..	4	..	1	..	..	..	..	..	112	61	48	25	285	21	2,996	368	269	14
23rd November	..	..	..	..	6	..	1	..	3	..	..	..	86	44	51	10	298	7	3,388	398	305	9
24th November	..	..	..	..	5	..	5	..	..	..	..	..	73	32	64	16	328	16	3,203	361	257	12
Total ..	..	1	..	..	42	8	13	3	3	..	1	..	695	302	416	157	2,440	127	29,139	5,805	1,859	42
Total—Day and night ..	1		..		50		16		3		1		997		573		2,567		34,944		1,901	
	At 3·5 tons 3·50 tons		At 1 ton ..		At 2·5 tons 125·00 tons		At ·75 ton 12·00 tons		At ·20 ton 0·60 ton		At ·3 ton 0·30 ton		At 1·1 tons 1,096·70 tons		At ·25 ton 143·25 tons		At ·1 ton 256·70 tons					

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	141·10
Average weight per day of 24 hours	..	..	..	20·16
Weight per foot width of metalled track	..	..	..	2·52

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	1,496·95
Average weight per day of 24 hours	..	..	213·85
Weight per foot width of metalled track	..	..	26·73

Total weight of all traffic in seven days—1,638·05 tons.

(1) **Location of observation**—Mile 72·37 (Chandrakona Road).

(2) **Index No. and name of road**—No. 2P. Raniganj-Midnapore Road.

(3) **Supervising officer**—Maulvi Jinnatali, Overseer, Public Works Department.

(4) **Nature of road surface**—Laterite stone-metalled.

(5) **Full width and metalled width of road**—24′ 0″ and 8′ 0″.

(6) **Average weight in tons of all traffic in 24 hours**—687·07 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November	..	..	..	..	6	10	..	4	..	..	..	..	148	160	103	116	162	36	388	115	45	11
19th November	..	..	..	..	12	5	5	3	..	..	..	..	205	275	165	195	194	18	1,135	107	66	14
20th November	..	..	..	..	8	4	2	2	..	..	..	..	224	258	154	102	185	158	435	108	73	28
21st November	..	..	..	..	5	4	..	4	..	..	..	..	203	312	246	162	171	85	289	87	69	23
22nd November	..	..	..	..	7	3	4	4	2	..	..	..	273	291	215	188	246	46	686	128	65	18
23rd November	..	..	..	..	4	3	9	2	2	..	..	..	143	202	175	175	152	116	278	120	45	23
24th November	..	..	..	..	6	5	8	2	1	..	..	..	299	426	251	249	142	107	296	238	27	23
Total ..	..	..	..	..	48	34	28	21	5	..	..	..	1,495	1,924	1,309	1,187	1,252	566	3,507	903	390	140
Total—Day and night ..	..		..		82		49		5		..		3,419		2,196		1,818		4,410		530	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		205·00 tons		36·75 tons		1·00 ton		..		3,760·90 tons		624·00 tons		181·80 tons					

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	242·75
Average weight per day of 24 hours	..	..	..	34·68
Weight per foot width of metalled track	..	..	..	4·34

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	4,566·70
Average weight per day of 24 hours	..	..	652·39
Weight per foot width of metalled track	..	..	81·55

Total weight of all traffic in seven days—4,809·45 tons.

(1) Location of observation—Mile 72·37 (Chandrakona Road).

(2) Index No. and name of road—No. 2P. Raniganj-Midnapore Road.

(3) Supervising officer—Maulvi Md. Jinnatali, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—472·73 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th January	..	.	..	..	8	5	12	7	..	..	..	..	50	84	80	111	96	23	206	71	21	10
16th January	..	..	..	..	12	4	9	11	..	..	..	..	72	117	47	19	154	44	2,524	1,552	25	19
17th January ..	..	..	..	..	10	5	19	9	..	..	..	..	91	117	83	88	130	35	453	157	19	9
18th January	..	..	..	..	9	3	20	16	..	..	..	..	193	123	147	113	237	22	1,083	102	14	8
19th January	..	..	..	..	10	5	18	7	..	..	..	..	223	65	134	37	131	24	172	72	15	6
20th January	..	..	..	..	7	5	16	14	..	..	..	..	237	261	158	133	74	35	346	130	25	7
21st January	..	..	..	..	9	9	11	9	..	..	..	..	305	266	205	175	103	54	676	185	6	8
Total ..	..	..	..	..	65	36	105	73	..	..	..	..	1,171	1,033	854	676	925	237	5,460	2,269	125	67
Total—Day and night ..	..		..		101		178		..		.		2,204		1,530		1,162		7,729		192	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		252·50 tons		133·50 tons		..		..		2,424·40 tons		382·50 tons		116·20 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	388·00
Average weight per day of 24 hours	.. .. ..	55·14
Weight per foot width of metalled track	.. .. ..	6·89

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	2,923·10
Average weight per day of 24 hours	.. ..	417·59
Weight per foot width of metalled track	.. ..	52 20

Total weight of all traffic in seven days—3,309 10 tons.

(1) Location of observation—Mile 89·5 (Bhadutala).

(2) Index No. and name of road—No. 2P. Raniganj-Midnapore Road.

(3) Supervising officer—Maulvi Jinnatali, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—463·92 tons.

Date.	Motor traffic.										Non-motor traffic.									
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.	Cattle.
	Loaded.		Unloaded.										Loaded.		Unloaded.					
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
18th November ..	..	..	..	..	12	5	..	1	..	..	..	..	84	81	77	21	141	10	519	87	216	4
19th November ..	..	..	..	..	8	3	5	1	..	..	..	..	40	118	50	35	113	13	433	72	46	4
20th November ..	..	..	..	..	11	2	5	1	..	..	..	1	119	318	152	40	114	2	348	85	210	12
21st November ..	..	..	..	..	12	3	7	..	..	..	..	..	131	151	157	66	129	7	367	81	108	16
22nd November ..	..	..	..	..	4	4	1	..	1	..	1	..	161	119	171	137	147	23	400	143	231	..
23rd November ..	..	..	..	..	5	2	8	3	3	1	4	..	172	198	181	140	150	4	417	196	35	122
24th November ..	..	..	..	..	6	10	6	4	..	..	..	2	182	375	191	255	164	12	480	285	138	140
Total ..	..	..	..	..	58	29	32	10	4	1	5	3	889	1,360	979	694	958	71	2,964	949	984	298
Total—Day and night ..	..		..		87		42		5		8		2,249		1,673		1,029		3,913		1,282	
	At 3·5 tons ..		At 1·0 ton ..		At 2·50 tons 217·50 tons		At ·75 ton 31·50 tons		At ·20 ton 1·00 ton		At ·3 ton 2·40 tons		At 1·1 tons 2,473·90 tons		At ·25 ton 418·25 tons		At · 1 ton 102·90 tons					

Motor traffic	Tons.
Total weight in seven days	250·00
Average weight per day of 24 hours	35·71
Weight per foot width of metalled track	4·46

Non-motor traffic	Tons.
Total weight in seven days	2,997·45
Average weight per day of 24 hours	428·21
Weight per foot width of metalled track	53·53

Total weight of all traffic in seven days—3,247 45 tons.

(1) Location of observation—Mile 89·50 (Bhadatola).

(2) Index No. and name of road—No. 2P. Raniganj-Midnapore Road.

(3) Supervising officer—Maulvi Jinnatali, Overseer, Public Works Department.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—408·95 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th January	..	..	..	..	10	1	8	5	..	..	..	..	61	79	61	44	106	22	379	113	66	..
16th January	..	..	..	..	8	5	18	7	..	..	..	..	49	144	48	225	135	24	385	186	24	40
17th January	..	..	..	..	8	4	14	7	2	2	2	2	160	166	207	270	107	75	390	167	52	32
18th January	..	..	..	..	8	6	11	11	..	..	4	4	141	210	116	148	109	82	423	185	87	34
19th January	1	..	..	1	5	6	9	25	..	..	7	7	95	113	71	137	101	88	325	210	41	62
20th January	1	..	..	1	9	6	12	19	..	..	3	3	135	118	78	130	116	78	295	201	55	57
21st January	..	..	..	..	8	6	13	12	..	..	4	4	147	135	95	102	125	95	287	230	67	53
Total ..	2	..	..	2	56	34	85	86	2	2	20	20	788	965	676	1,056	799	464	2,484	1,292	392	278
Total—Day and night ..	2		2		90		171		4		40		1,753		1,732		1,263		3,776		670	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At · 1 ton					
	7·00 tons		2·00 tons		225·00 tons		128·25 tons		0·80 ton		12·00 tons		1,928·30 tons		433·00 tons		126·30 tons					

Motor traffic	Tons.
Total weight in seven days	363·05
Average weight per day of 24 hours	51·86
Weight per foot width of metalled track	6·48

Non-motor traffic	Tons.
Total weight in seven days	2,499·60
Average weight per day of 24 hours	357·09
Weight per foot width of metalled track	44·64

Total weight of all traffic in seven days—2,862·65 tons.

(1) Location of observation—Mile 5·25 (junction of road Nos. 2 and 3).

(2) Index No. and name of road—No. 2. Bombay Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of Road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—71·04 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
8th June	..	..	..	..	..	..	..	..	..	..	..	..	32	15	46	15	3	..	248	98	3	..
9th June	..	..	..	..	..	..	..	..	..	..	..	..	34	14	62	15	9	12	208	72	121	12
10th June	..	..	..	..	..	..	..	..	..	..	..	..	40	30	32	21	28	16	132	65	68	..
11th June	..	..	..	..	..	..	..	..	..	..	..	..	33	20	38	16	26	10	261	54	100	10
12th June	..	..	..	..	..	..	..	..	..	..	..	..	28	17	27	10	18	5	173	56	82	3
13th June	..	..	..	..	..	..	..	..	..	..	..	..	19	12	18	13	20	7	148	41	119	15
14th June	..	..	..	..	..	..	..	..	..	..	..	..	40	17	34	25	18	10	141	47	114	20
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	226	125	257	115	122	60	1311	433	607	60
Total—Day and night ..	..		..		..		..		..		..		351		372		182		1,744		667	
	At 3·5 tons ..		At 1 ton ..		At 2·5 tons ..		At ·75 ton ..		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 386·10 tons		At ·25 ton 93·00 tons		At ·1 ton 18·20 tons					

Motor traffic:

					Tons.
Total weight in seven days	..	..	..	..	..
Average weight per day of 24 hours	..	..	..	..	..
Weight per foot width of metalled track	..	..	..	..	..

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	497·30
Average weight per day of 24 hours	..	..	71·04
Weight per foot width of metalled track	..	..	8·88

Total weight of all traffic in seven days—928·10 tons.

(1) Location of observation—Mile 5·25 (junction of roads Nos. 2 and 3).

(2) Index No. and name of road—No. 2. Bombay Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—9·84 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
17th December	..	..	..	..	..	..	..	..	..	..	..	..	3	2	10	5	15	5	79	74	32	10
18th December	..	..	..	..	..	..	..	..	..	..	..	..	11	6	..	..	15	3	56	28	..	..
19th December	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	6	5	75	38	..	..
20th December	..	..	..	..	..	..	..	..	..	..	..	..	3	1	4	1	13	8	54	40	11	13
21st December	..	..	..	..	..	..	..	..	..	..	..	..	2	1	7	5	10	7	50	41	13	17
22nd December	..	..	..	..	..	..	..	..	..	..	..	..	4	5	5	2	13	5	34	25	..	..
23rd December	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	2	14	11	35	36	9	7
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	26	15	28	15	86	44	383	282	65	47
Total—Day and night ..	....		....		....		....		....		....		41		43		130		665		112	
	At 3·5 tons		At 1 ton		A 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		....		....		....		....		45·10 tons		10·75 tons		13·00 tons					

Motor traffic — Tons.
Total weight in seven days .. ..
Average weight per day of 24 hours .. ..
Weight per foot width of metalled track .. ..

Non-motor traffic — Tons.
Total weight in seven days .. .. 68·85
Average weight per day of 24 hours .. .. 9·84
Weight per foot width of metalled track .. .. 1·23

Total weight of all traffic in seven days—68·85 tons.

(1) Location of observation—Mile 5·25 (junction of roads Nos. 2 and 3).

(2) Index No. and name of road—No. 2. Bombay Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—70·53 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
4th February	..	..	..	..	..	..	..	..	..	..	..	..	53	21	43	10	14	2	107	38	81	..
5th February	..	..	..	..	..	..	..	..	..	..	..	..	55	18	39	14	15	..	96	58	62	16
6th February	..	..	..	..	..	..	..	..	..	..	..	..	40	11	21	10	16	..	89	25	42	..
7th February	..	..	..	..	..	..	..	..	..	..	..	..	20	9	12	8	9	..	69	27	22	5
8th February	..	..	..	..	..	..	..	..	..	..	..	..	33	17	25	14	13	..	63	13	24	..
9th February	..	..	..	..	..	..	..	..	..	..	..	..	30	15	29	9	15	..	105	23	26	..
10th February	..	..	..	..	..	..	..	..	..	..	2	..	41	13	24	20	16	..	83	13	33	..
Total ..	..	..	..	..	..	..	..	..	..	..	2	..	272	104	193	85	98	2	612	197	290	21
Total—Day and night ..	....		....		....		....		....		2		376		278		100		809		311	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		....		....		....		0·60 tons		413·60 tons		69·50 tons		10·00 tons					

Motor traffic:

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of metalled track	..

Non-motor traffic:

	Tons.
Total weight in seven days	493·70
Average weight per day of 24 hours	70·53
Weight per foot width of metalled track	8·81

Total weight of all traffic in seven days—493·70 tons.

(1) Location of observation—Mile 5·25 (junction of road Nos. 2 and 3).

(2) Index No. and name of road—No. 3. Lodhasye-Kupannadi Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—255·36 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
8th June	..	..	..	..	2	..	4	..	..	..	..	..	134	154	79	45	74	10	983	262	137	21
9th June	..	..	..	..	2	..	2	..	..	..	2	..	150	60	75	60	114	18	948	313	118	14
10th June	..	..	..	..	2	..	5	..	..	..	..	..	173	75	221	109	90	22	1,151	443	46	39
11th June	..	..	..	..	2	..	1	..	..	..	..	..	184	36	121	35	110	15	1,062	258	138	19
12th June	..	..	..	..	2	..	..	..	..	..	..	..	48	59	57	55	59	18	574	277	93	28
13th June	..	..	..	..	2	..	2	..	..	..	..	..	33	46	26	35	65	16	692	268	159	32
14th June	..	..	..	..	2	..	4	..	..	..	..	..	84	52	47	41	73	17	529	265	148	25
Total ..	..	..	..	..	14	..	18	..	..	..	2	..	806	482	626	380	585	116	5,939	2,086	839	178
Total—Day and night ..	..		..		14		18		..		2		1,288		1,006		701		8,025		1,017	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		35·00 tons		13·50 tons		..		0·60 tons		1,416·80 tons		251·50 tons		70·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	48·50
Average weight per day of 24 hours	6·93
Weight per foot width of metalled track	0·87

Non-motor traffic:

	Tons.
Total weight in seven days	1,739·00
Average weight per day of 24 hours	248·43
Weight per foot width of metalled track	31·05

Total weight of all traffic in seven days—1,787·50 tons.

(1) Location of observation—Mile 5·25 (junction of roads Nos. 2 and 3).

(2) Index No. and Name of road—No. 3. Lodhasye-Kupannadi Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—278·66 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
17th December ..	..	..	..	..	10	5	3	..	1	..	..	..	85	126	21	16	64	30	410	193	34	26
18th December ..	..	..	..	..	8	1	..	..	..	..	..	..	82	87	26	52	42	18	293	163	56	18
19th December ..	..	..	..	..	8	9	..	..	..	..	..	..	136	146	33	93	46	36	355	218	60	49
20th December ..	..	..	..	..	9	3	1	..	..	..	..	..	80	137	61	24	51	43	279	233	35	27
21st December ..	..	..	..	..	7	2	..	..	..	..	1	1	47	71	91	78	25	29	255	185	18	31
22nd December ..	..	..	..	..	3	..	..	..	..	..	..	..	56	96	35	21	34	16	255	134	81	14
23rd December ..	..	..	..	..	11	6	..	..	..	..	2	..	113	126	32	66	56	32	320	229	34	16
Total ..	..	..	..	..	56	26	4	..	1	..	3	1	599	789	299	350	318	204	2,167	1,355	318	181
Total—Day and night ..	..		..		82		4		1		4		1,388		649		522		3,522		499	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		205·00 tons		3·00 tons		0·20 ton		1·20 tons		1,526·80 tons		162·25 tons		52·20 tons					

Motor traffic		Tons.
Total weight in seven days	.. ..	208·20
Average weight per day of 24 hours	.. ..	29·74
Weight per foot width of metalled track	.. ..	3·72

Non-motor traffic		Tons.
Total weight in seven days	.. ..	1,742·45
Average weight per day of 24 hours	.. ..	248·92
Weight per foot width of metalled track	.. ..	31·11

Total weight of all traffic in seven days—1,950·65 tons.

(1) Location of observation—Mile 5·25 (junction of roads Nos. 2 and 3).

(2) Index No. and name of road—No. 3. Lodhasye-Kupannadi Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—458·61 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
4th February ..	..	..	..	..	2	..	4	1	..	..	..	..	215	183	165	160	61	2	833	105	172	..
5th February ..	..	..	..	..	3	..	..	2	..	..	..	..	160	168	208	92	58	15	772	254	65	22
6th February ..	..	..	..	..	4	..	3	1	..	..	..	..	173	170	134	105	87	3	540	153	27	..
7th February ..	..	..	..	..	4	..	1	..	..	..	..	..	133	80	120	62	65	4	574	88	57	..
8th February ..	..	..	..	..	5	..	5	1	..	..	2	..	136	194	177	83	81	7	352	98	20	..
9th February ..	..	..	..	..	4	..	5	2	..	..	..	..	156	140	188	63	91	3	535	105	91	..
10th February ..	..	..	..	..	4	..	1	..	..	..	3	..	207	236	223	60	85	..	652	117	213	..
Total ..	..	..	..	..	26	..	19	7	..	..	5	..	1,180	1,191	1,215	625	528	34	4,258	920	645	22
Total—Day and night ..	..		..		26		26		..		5		2,371		1,840		562		5,178		667	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		65·00 tons		19·50 tons		..		1·50 tons		2,608·10 tons		460·00 tons		56·20 tons					

Motor traffic:

	Tons.
Total weight in seven days	85·50
Average weight per day of 24 hours	12·07
Weight per foot width of metalled track	1·51

Non-motor traffic:

	Tons.
Total weight in seven days ..	.. 3,125·80
Average weight per day of 24 hours ..	.. 446·54
Weight per foot width of metalled track ..	.. 55·82

Total weight of all traffic in seven days—3,210·30 tons.

(1) Location of observation—Mile 2·9 (junction of roads Nos. 4 and 5).

(2) Index No. and name of road—No. 4. Pilgrim Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Moorum-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—86·10 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
1st June	..	..	..	..	..	..	1	..	..	..	..	..	23	10	35	7	19	7	222	63	39	8
2nd June	..	..	..	..	..	..	..	..	..	..	1	..	24	34	39	30	21	4	517	224	217	14
3rd June	..	..	..	..	..	..	..	..	..	..	..	..	18	18	36	23	13	3	277	145	57	20
4th June	..	..	..	..	..	..	2	1	..	..	..	..	38	21	31	9	12	11	443	189	914	26
5th June	..	..	..	..	..	..	1	..	..	..	..	..	26	23	33	10	11	5	423	188	204	23
6th June	..	..	..	..	..	..	..	..	..	..	1	..	43	34	29	25	33	16	411	237	386	42
7th June	..	..	..	..	..	..	1	..	..	..	1	..	102	24	71	12	17	9	439	176	218	17
Total ..	..	..	..	..	..	..	5	1	..	..	3	..	274	164	274	116	126	55	2,732	1,222	2,035	150
Total—Day and night ..	..		..		..		6		..		3		438		390		181		3,954		2,185	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		4·50 tons		..		0·90 ton		481·80 tons		97·50 tons		18·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	4·50
Average weight per day of 24 hours	0·64
Weight per foot width of metalled track	0·08

Non-motor traffic:

	Tons.
Total weight in seven days	598·30
Average weight per day of 24 hours	85·46
Weight per foot width of metalled track	10·68

Total weight of all traffic in seven days—602·80 tons.

(1) Location of observation—Mile 2·90 (junction of roads Nos. 4 and 5).

(2) Index No. and name of road—No. 4. Pilgrim Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Moorum-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—44·89 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
1st December	2	..	..	..	..	..	..	..	..	..	..	..	20	9	26	2	13	5	278	152	30	11
2nd December	..	..	..	..	..	..	..	..	..	..	..	..	12	13	16	6	15	4	350	81	50	19
3rd December	2	..	..	..	..	..	..	..	..	..	..	..	9	9	22	17	15	4	179	84	35	26
4th December	..	..	..	..	..	..	..	..	..	..	..	..	8	3	15	15	25	4	351	141	34	14
5th December	..	..	..	..	..	..	..	..	..	..	2	..	19	19	28	11	23	7	273	69	65	32
6th December	1	..	..	..	..	..	..	..	..	..	..	..	13	23	12	2	18	9	184	114	39	42
7th December	..	..	..	..	..	..	..	..	..	..	..	..	10	40	13	15	17	25	297	175	26	4
Total ..	5	..	..	..	..	..	..	..	..	..	2	..	91	116	132	68	126	58	1,912	816	279	148
Total—Day and night ..	5		..		..		..		..		2		207		200		184		2,728		427	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	17·50 tons		..		..		..		..		0·60 ton		227·70 tons		50·00 tons		18·40 tons					

Motor traffic:

	Tons.
Total weight in seven days	17·50
Average weight per day of 24 hours	2·50
Weight per foot width of metalled track	0·31

Non-motor traffic:

	Tons.
Total weight in seven days	296·70
Average weight per day of 24 hours	42·39
Weight per foot width of metalled track	5·30

Total weight of all traffic in seven days—314·20 tons.

(1) Location of observation—Mile 2·9 (junction of road Nos. 4 and 5).

(2) Index No. and name of road—No. 4. Pilgrim Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Moorum-metalled.

(5) Full width and metalled width of road—24′ and 8′.

(6) Average weight in tons of all traffic in 24 hours—271·34 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
20th January	2	..	1	..	..	..	..	..	..	..	..	1	48	109	48	38	42	..	266	135	187	..
21st January	..	..	..	..	8	..	21	1	..	..	..	..	53	161	30	135	28	3	400	244	78	22
22nd January	..	..	..	..	5	..	..	..	..	..	..	..	123	111	110	47	62	..	410	114	45	10
23rd January	..	..	..	..	3	.	..	..	..	..	..	..	200	59	218	44	100	..	474	84	199	..
24th January	..	..	3	..	..	..	..	..	..	..	2	..	60	70	54	71	47	5	326	69	83	11
25th January	2	..	3	..	..	..	..	..	..	..	..	..	90	70	110	121	61	..	451	118	122	..
26th January	..	..	..	..	2	..	..	..	..	..	1	..	152	41	112	40	47	..	312	87	126	3
Total ..	4	..	7	..	18	..	21	1	..	..	3	1	726	621	682	496	387	8	2,639	851	840	46
Total—Day and night ..	4		7		18		22		..		4		1,347		1,178		395		3,490		886	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	14·00 tons		7·00 tons		45·00 tons		16·50 tons		..		1·20 tons		1,481·70 tons		294·50 tons		39·50 tons					

Motor traffic.	Tons.
Total weight in seven days	82·50
Average weight per day of 24 hours	11·79
Weight per foot width of metalled track	1·47

Non-motor traffic.	Tons.
Total weight in seven days	1,816·90
Average weight per day of 24 hours	259·55
Weight per foot width of metalled track	32·44

Total weight of all traffic in seven days—1,899·40 tons.

(1) Location of observation—Mile 1·75 (junction of roads Nos. 4 and 5).

(2) Index No. and name of road—No. 5. Burdwan Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours— 330·71 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.
1936.																						
1st June	2	..	..	..	4	1	..	..	..	..	1	..	95	88	95	24	141	20	1,043	345	430	31
2nd June	..	..	..	..	2	1	..	..	..	..	1	..	91	174	39	152	108	19	1,325	361	171	63
3rd June	..	..	1	..	3	1	..	..	..	..	1	1	129	53	72	41	101	16	982	389	595	49
4th June	..	..	..	..	4	2	3	1	..	..	3	1	132	97	134	23	116	21	1,353	481	963	70
5th June	..	..	..	..	5	2	2	1	..	..	4	2	165	57	92	24	113	15	1,549	487	614	65
6th June	..	..	..	..	5	1	2	..	1	..	13	5	112	128	60	51	168	25	1,252	606	857	95
7th June	..	..	..	..	4	2	..	1	..	..	3	1	261	101	138	35	107	27	1,288	521	644	79
Total ..	2	..	1	..	27	10	7	3	1	..	26	10	985	698	630	350	854	143	8,702	3,190	4,574	452
Total—Day and night ..	2		1		37		10		1		36		1,683		980		997		11,982		5,026	
	At 3·5 tons		At 1 ton		At 2·5 tons		·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	7·00 tons		1·00 ton		92·50 tons		7·50 tons		0·20 ton		10·80 tons		1,851·30 tons		245·00 tons		99·70 tons					

Motor traffic:

	Tons.
Total weight in seven days	108·20
Average weight per day of 24 hours	15·45
Weight per foot width of metalled track	1·93

Non-motor traffic:

	Tons.
Total weight in seven days	2,206·80
Average weight per day of 24 hours	315·26
Weight per foot width of metalled track	39·41

Total weight of all traffic in seven days—2,315·00 tons.

(1) Location of observation—Mile 1·75 (junction of roads Nos. 4 and 5).

(2) Index No. and name of road—No. 5. Burdwan Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours —196·75 tons.

Date.	Motor traffic.									
	Lorries.				Buses.		Cars and taxis.		Motor cycles.	
	Loaded.		Unloaded.							
	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.
1936.										
1st December	..	..	..	..	1	1	2	..	..	..
2nd December	..	..	..	..	4	1	..	..	..	..
3rd December	..	..	..	..	3	1	..	2	..	..
4th December	..	..	..	..	7	1	2	1	..	..
5th December	..	..	..	..	1	..	3	2	1	..
6th December	..	..	..	..	9	1	..	..	..	..
7th December	..	..	..	..	6	1	1	..	..	..
Total ..	..	..	..	..	31	6	8	5	1	..
Total—Day and night ..	..		..		37		13		1	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton	
	..		..		92·50 tons		9·75 tons		0·20 ton	

Motor traffic:

		Tons.
Total weight in seven days	.. ..	192·45
Average weight per day of 24 hours	.. ..	14·64
Weight per foot width of metalled track	.. ..	1·83

Date.	Non-motor traffic.													
	4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
			Loaded.		Unloaded.							
	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.												
1st December	1	..	95	41	51	32	105	38	1,127	407	49	29
2nd December	5	3	70	44	94	41	127	26	1,247	229	71	25
3rd December	3	..	57	24	67	25	79	15	683	128	75	18
4th December	1	1	85	46	73	14	111	26	1,173	293	86	34
5th December	13	1	101	32	99	25	140	44	1,463	282	88	30
6th December	1	..	90	61	60	37	91	36	917	343	66	18
7th December	2	1	99	47	76	37	133	41	1,357	366	168	66
Total ..	26	6	597	295	520	211	786	226	7,967	2,048	603	220
Total—Day and night ..	32		892		731		1,012		10 015		823	
	At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	9·60 tons		981·20 tons		182·75 tons		101·20 tons					

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,274·75
Average weight per day of 24 hours	.. ..	182·11
Weight per foot width of metalled track	.. ..	22·76

Total weight of all traffic in seven days—1,377·20 tons.

(1) Location of observation—Mile 1·75 (junction of roads Nos. 4 and 5).

(2) Index No. and name of road—No. 5. Burdwan Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—629·56 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
20th January	..	..	..	..	4	..	6	1	..	..	9	3	191	183	159	92	168	43	985	305	391	..
21st January	..	..	..	..	18	2	25	9	..	..	2	..	104	216	40	116	125	18	1,067	328	211	3
22nd January	..	..	..	..	8	..	2	..	1	..	..	..	328	176	265	125	206	23	857	172	274	7
23rd January	..	..	..	..	9	..	4	..	..	..	4	..	436	66	368	94	304	22	1,501	191	525	1
24th January	3	..	..	..	6	1	1	..	..	..	11	..	273	176	221	144	185	21	990	231	331	..
25th January	3	..	..	..	3	..	..	..	..	..	4	..	461	125	311	161	231	27	1,016	265	323	..
26th January	..	..	..	..	5	..	..	..	..	..	3	..	284	84	293	98	231	13	973	187	301	5
Total ..	6	..	..	..	53	3	38	10	1	..	33	3	2,079	1,026	1,657	830	1,450	167	7,389	1,679	2,356	16
Total—Day and night ..	6		..		56		48		1		36		3,105		2,487		1,617		9,068		2,372	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 tons		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	21·00tons		..		140·00 tons		36·00 tons		0·20 ton		10·80 tons		3,415·50 tons		621·75 tons		161·70 tons					

Motor traffic	Tons.
Total weight in seven days	197·20
Average weight per day of 24 hours	28·17
Weight per foot width of metalled track	3·52

Non-motor traffic	Tons.
Total weight in seven days	4,209·75
Average weight per day of 24 hours	601·39
Weight per foot width of metalled track	75·17

Total weight of all traffic in seven days—4,406·95 tons.

(1) Location of observation—Mile 14·00 (junction of roads Nos. 5 and 26).

(2) Index No. and name of road—No. 5. Burdwan Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—77·39 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
9th December	..	..	..	..	1	1	2	..	..	..	..	..	22	47	3	2	53	6	916	251	33	..
10th December	..	..	..	..	3	1	..	..	..	..	..	..	6	37	13	19	14	23	197	167	1	5
11th December	..	..	..	..	..	1	..	..	..	..	..	..	2	49	4	20	12	31	192	197	19	38
12th December	..	..	..	..	1	2	..	..	..	..	..	..	29	40	16	16	32	..	578	157	108	46
13th December	..	..	..	..	3	2	1	1	..	..	..	..	6	32	5	5	33	16	231	244	19	22
14th December	..	..	..	..	1	..	..	..	..	..	..	..	9	20	4	14	14	6	242	324	8	2
15th December	..	..	..	..	3	..	..	..	..	..	..	..	37	52	7	12	20	35	271	332	44	83
Total	..	..		..	12	7	3	1	..	..	..	..	111	277	52	88	178	117	2,627	1,672	232	196
Total—Day and night	..		..		19		4		..		..		388		140		295		4,299		428	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		47·50 tons		3·00 tons		..		..		426·80 tons		35·00 tons		29·50 tons					

Motor traffic:

	Tons.
Total weight in seven days	50·50
Average weight per day of 24 hours	7·21
Weight per foot width of metalled track	0·90

Non-motor traffic:

	Tons
Total weight in seven days	491·30
Average weight per day of 24 hours	70·18
Weight per foot width of metalled track	8·77

Total weight of all traffic in seven days—541·80 tons.

(1) Location of observation—Mile 0·25 (Ghatal).

(2) Index No. and name of road—No. 7. Ghatal-Cossye River Road.

(3) Supervising officer—Babu D. C. Mookerjee, Subdivisional Officer, District Board (Ghatal).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—319·84 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.
1936.																						
1st December ..	..	..	..	..	15	..	7	1	..	..	..	..	223	21	195	1	49	1	1,952	122	676	..
2nd December ..	..	..	..	..	14	1	7	2	..	..	..	..	226	43	67	..	48	1	1,389	123	581	12
3rd December ..	..	..	..	..	15	2	6	2	..	..	..	..	185	39	63	..	52	2	1,232	154	255	..
4th December ..	..	..	..	..	13	2	9	2	..	..	..	..	139	17	41	..	52	2	1,378	187	543	1
5th December ..		..	..	..	11	1	8	..	..	..	..	..	231	51	53	..	44	4	1,942	162	511	3
6th December ..	..	..	..	..	13	2	9	2	..	..	..	..	196	47	67	4	41	1	1,947	245	239	..
7th December ..	..	..	..	..	15	4	2	1	..	..	..	..	138	39	64	..	45	4	1,698	179	502	10
Total ..	..	..	..	..	96	12	48	10	..	..	..	..	1,338	257	540	5	331	15	11,538	1,172	3,307	26
Total—Day and night ..	..		..		108		58		..		..		1,595		545		346		12,710		3,333	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At 20 ton		At ·3 ton		At 1 1 tons		At ·25 ton		At ·1 ton					
	..		..		270·00 tons		43·50 tons		..		..		1,754·50 tons		136·25 tons		34·60 tons					

Motor traffic:

	Tons.
Total weight in seven days	313·50
Average weight per day of 24 hours	44·79
Weight per foot width of metalled track	5·60

Non-motor traffic:

	Tons.
Total weight in seven days	1,925·35
Average weight per day of 24 hours	275·05
Weight per foot width of metalled track	34·38

Total weight of all traffic in seven days—2,238·85 tons.

(1) Location of observation—Mile 0·25 (Ghatal).

(2) Index No. and name of road—No. 7. Ghatal-Cossye River Road.

(3) Supervising officer—Babu D. C. Mookerjee, Subdivisional Officer, District Board (Ghatal).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—1,379·28 tons.

	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
6th January	..	..	..	..	14	2	7	1	..	..	..	..	591	209	200	6	84	5	2,288	204	967	2
7th January	..	..	..	..	14	1	9	4	..	..	..	..	464	151	80	..	66	2	1,765	118	463	6
8th January	..	..	..	..	16	2	14	7	..	..	..	..	542	350	68	64	65	6	2,102	205	960	..
9th January	..	..	..	..	11	1	13	2	..	..	..	..	926	268	87	..	84	8	2,256	252	1,315	2
10th January	..	..	..	..	16	3	13	4	..	..	..	..	1,573	303	47	..	65	1	2,463	284	1,256	20
11th January	..	..	..	..	25	5	29	7	..	..	..	..	1,223	111	151	1	58	6	3,430	324	1,310	..
12th January	..	..	..	..	23	5	23	5	..	..	..	..	1,211	186	209	28	69	5	8,704	626	1,784	..
Total ..	..	..	..	..	119	19	108	30	..	..	..	..	6,530	1,578	842	99	491	33	23,008	2,013	8,055	30
Total—Day and night ..	..		..		138		138		..		..		8,108		941		524		25,021		8,085	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		345·00 tons		103·50 tons		..		..		8,918·80 tons		235·25 tons		52·40 tons					

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	448·50
Average weight per day of 24 hours	..	..	..	64·07
Weight per foot width of metalled track	..	..	..	8·01

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	9,206·45
Average weight per day of 24 hours	..	..	1,315·21
Weight per foot width of metalled track	..	..	164·40

Total weight of all traffic in seven days—9,654·95 tons.

(1) Location of observation—Mile 3·25 (Gonokbandi).

(2) Index No. and name of road—No. 8. Garhbeta-Gohaltore Road.

(3) Supervising officer—Babu R. K. Dinda, Sub-overseer, Satbankura.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—71·82 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1934.																						
22nd July	..	..	..	..	3	1	3	1	..	..	..	..	25	17	10	13	83	31	510	144	79	27
23rd July	..	..	..	..	2	1	..	..	..	..	..	..	5	5	2	5	86	36	752	280	109	38
24th July	..	..	..	..	5	..	..	..	..	..	..	..	33	38	20	24	91	37	644	220	68	27
25th July	..	..	..	..	5	1	..	..	..	..	..	..	13	20	14	17	62	30	512	108	59	12
26th July	..	..	..	..	3	..	2	..	..	..	..	..	20	26	7	8	65	20	519	164	67	21
27th July	..	..	..	..	2	..	..	..	..	..	..	..	14	27	15	20	87	24	539	152	78	20
28th July	..	..	..	..	2	..	..	..	..	..	..	..	20	24	15	18	56	23	540	176	60	19
Total ..	..	..	..	..	22	3	5	1	..	..	..	.	130	157	83	105	530	201	4,016	1,244	520	164
Total—Day and night ..	..		..		25		6		..		..		287		188		731		5,260		684	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		62·50 tons		4·50 tons		..		..		315 70 tons		47·00 tons		7·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	67·00
Average weight per day of 24 hours	9·57
Weight per foot width of metalled track	1·19

Non-motor traffic:

	Tons.
Total weight in seven days	435·80
Average weight per day of 24 hours	62·25
Weight per foot width of metalled track	7·78

Total weight of all traffic in seven days—502·80 tons.

(1) **Location of observation**—Mile 3·25 (Gonokbandi).

(2) **Index No. and name of road**—No. 8. Garhbeta-Gohaltor Road.

(3) **Supervising officer**—Babu R. K. Dinda, Sub-overseer, Satbankura.

(4) **Nature of road surface**—Laterite stone-metalled.

(5) **Full width and metalled width of road**—24′ 0″ and 8′ 0″.

(6) **Average weight in tons of all traffic in 24 hours**—762·24 tons.

Date.	Motor traffic.												Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.				4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
	Loaded.		Unloaded.												Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.			Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1936.																										
22nd November	2	..	..	..	..	..	..	..	2	..			..	..	368	204	357	251	300	12	1,417	500	100	44		
23rd November ..	2	..	..	..	3	2	..	..	2	..			..	..	138	164	165	133	183	20	1,000	198	100	37		
24th November	1	..	1	..	2	..	1	..	1	1			..	..	198	456	343	230	400	32	1,400	301	70	49		
25th November	..	..	..	..	3	..	..	..	2	..			..	..	339	220	186	117	242	93	1,151	305	112	9		
26th November	..	..	2	..	2	1	1	..	..	..			..	..	302	133	165	127	162	50	1,221	149	54	13		
27th November	..	..	..	..	2	..	3	..	1	..			..	..	194	399	351	192	216	24	988	192	184	28		
28th November	..	..	..	..	2	2	..	..	..	..			..	..	248	440	554	329	260	44	1,363	251	223	28		
Total ..	5	..	3	..	14	5	5	..	8	1			..	..	1,787	2,016	2,121	1,379	1,763	275	8,540	1,896	847	208		
Total—Day and night ..	5		3		19		5		9				..		3,803		3,500		2,038		10,436		1,055			
	At 3·5 tons		At 1 ton		At 2 5 tons		At ·75 ton		At ·20 ton				At ·3 ton		At 1·1 tons		At 25 ton		At ·1 ton							
	17·50 tons		3·00 tons		47·50 tons		3·75 tons		1 80 tons				..		4,183·30 tons		875·00 tons		203 80 tons							

Motor traffic:

		Tons.
Total weight in seven days	.. ..	73·55
Average weight per day of 24 hours	.. ..	10·51
Weight per foot width of metalled track	.. ..	1·31

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	5,262 10
Average weight per day of 24 hours	.. ..	751·73
Weight per foot width of metalled track	.. ..	93·97

Total weight of all traffic in seven days—5,335 65 tons.

(1) Location of observation—Mile 3·25 (Gonokbandi).

(2) Index No. and name of road—No. 8. Garbetta-Gohaltore Road.

(3) Supervising officer—Babu R. K. Dinda, Sub-overseer, Satbankura.

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—512·53 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded										Loaded.		Unloaded							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
25th January	..	..	..	..	3	1	..	..	1	..	..	..	189	57	259	38	176	41	1,189	335	58	7
26th January	..	..	..	..	2	2	..	..	..	..	..	..	233	69	199	38	158	25	1,125	161	107	6
27th January	..	..	..	..	3	1	2	..	..	..	..	..	283	33	231	21	170	19	1.021	150	24	1
28th January	..	..	..	..	2	2	..	..	1	..	..	..	334	52	198	33	192	23	1,642	252	37	5
29th January	..	..	..	..	2	1	..	..	..	..	..	..	138	51	193	45	147	37	869	262	30	1
30th January	..	..	..	..	5	1	..	..	..	..	..	..	393	48	298	35	176	24	781	206	32	3
31st January	..	..	..	..	3	2	..	..	..	..	..	..	391	301	353	215	181	57	1,901	291	35	9
Total ..	..	..	..	..	20	10	2	..	2	..	..	..	1,961	611	1,731	425	1,200	226	8,528	1,657	323	32
Total—Day and night ..	..		..		30		2		2		..		2,572		2,156		1,426		10.185		355	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At 3 ton		At 1·1 tons		At ·25 tons		At ·1 ton					
	..		..		75·00 tons		1·50 ton		0·40 ton		..		2,829·20 tons		539·00 tons		142·60 tons					

Motor traffic:

	Tons.
Total weight in seven days	76·90
Average weight per day of 24 hours	10·99
Weight per foot width of metalled track	1·37

Non-motor traffic:

	Tons.
Total weight in seven days	3,510·80
Average weight per day of 24 hours	501·54
Weight per foot width of metalled track	62·69

Total weight of all traffic in seven days—3,587·70 tons.

(1) **Location of observation—Mile 28·40 (Protappur).**

(2) **Index No. and name of road—No. 11. Panskura-Tamluk Road.**

(3) **Supervising officer—Babu P. C. Bose, Sub-overseer.**

(4) **Nature of road surface—Quartz-metalled.**

(5) **Full width and metalled width of road—24′ 0″ and 8′ 0″.**

(6) **Average weight in tons of all traffic in 24 hours—619·87 tons.**

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
4th June	9	5	13	..	46	22	81	23	..	..	..	..	360	147	156	121	357	102	2,218	936	685	150
5th June	1	10	15	..	55	14	42	20	.	..	..	..	155	332	142	119	233	58	1,115	748	200	85
6th June	10	2	6	6	19	23	37	14	2	..	..	..	109	123	36	58	285	44	1,016	593	90	43
7th June	4	5	6	..	23	16	30	12	..	..	..	..	85	48	55	9	205	61	943	316	110	24
8th June	6	..	5	..	24	15	28	15	..	..	..	..	55	47	35	27	166	54	781	482	54	54
9th June	10	..	13	..	17	21	31	28	..	..	..	..	65	61	45	46	144	67	1,035	422	76	55
10th June	19	6	19	6	51	15	33	12	..	..	..	..	298	147	255	90	234	35	885	527	193	96
Total ..	59	28	77	12	235	126	282	124	2	..	..	..	1,127	905	724	470	1.624	421	7,993	4,024	1,408	507
Total—Day and night ..	87		89		361		406		2		..		2,032		1,194		2,045		12,017		1,915	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 tons		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	304·50 tons		89·00 tons		902·50 tons		304·50 tons		0·40 ton		..		2,235·20 tons		298·50 tons		204·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	1,600·90
Average weight per day of 24 hours	.. ..	228·70
Weight per foot width of metalled track	.. ..	25·58

Non-motor traffic:

		Tons.
Total weight in sven days	.. ..	2,738·20
Average weight per day o. 24 hours	.. ..	391 17
Weight per foot width of metalled track	.. ..	48·89

Total weight of all traffic in seven days—4,339 10 tons.

(1) Location of observation—Mile 28·40 (Protappur).

(2) Index No. and name of road—No. 11. Panskura-Tamluk Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Quartz-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—277·81 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
15th December	..	..	..	..	38	27	22	19	..	..	..	..	82	107	44	99	115	25	692	227	112	62
16th December	..	..	..	..	22	20	37	17	..	..	..	..	63	87	100	72	184	19	414	243	57	15
17th December	..	..	..	..	19	10	34	5	..	..	..	..	48	38	69	29	152	17	934	121	135	20
18th December	..	..	..	..	19	16	24	13	..	..	..	..	51	45	38	42	186	41	446	209	28	49
19th December	..	..	..	..	17	11	35	8	..	..	..	..	44	23	33	34	174	32	437	147	47	33
20th December ..	..	..	..	..	14	12	19	10	..	..	..	..	31	37	36	31	161	30	585	128	54	18
21st December	..	..	..	..	17	11	20	7	..	..	..	..	49	30	41	28	120	16	458	144	58	34
Total ..	..	..	..	..	146	107	191	79	..	..	..	..	368	367	361	335	1,092	180	3,966	1,219	491	231
Total—Day and night ..	..		..		253		270		..		..		735		696		1,272		5,185		722	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		632·50 tons		202·50 tons		..		..		808·50 tons		174·00 tons		127·20 tons					

Motor traffic:

	Tons.
Total weight in seven days	835·00
Average weight per day of 24 hours	119·28
Weight per foot width of metalled track	14·91

Non-motor traffic:

	Tons.
Total weight in seven days	1,109·70
Average weight per day of 24 hours	158·53
Weight per foot width of metalled track	19·81

Total weight of all traffic in seven days—1,944·70 tons.

(1) Location of observation—Mile 28·4 (Protappur).

(2) Index No. and name of road—No. 11. Panskura-Tamuk Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Quartz-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—291·15 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
4th March	..	..	..	..	25	8	33	11	..	..	..	..	144	32	164	63	291	151	1,528	194	268	24
5th March	..	..	..	..	18	10	26	10	..	..	..	..	54	35	84	30	214	30	365	246	1,528	74
6th March	..	..	..	..	33	11	35	6	2	..	..	..	55	34	29	26	190	22	496	146	30	23
7th March	..	..	..	..	24	15	7	11	4	..	..	..	48	32	63	23	168	53	411	186	37	34
8th March	..	..	..	..	20	8	32	8	2	..	..	..	50	47	48	50	117	32	445	287	39	25
9th March	..	..	..	..	24	11	25	8	2	..	..	..	43	52	50	39	150	35	538	190	39	9
10th March	..	..	..	..	29	17	30	15	2	..	..	..	88	51	77	37	210	51	574	183	56	14
Total ..	..	..	..	..	173	80	188	69	12	..	..	..	482	283	515	268	1,349	383	4,557	1,432	1,997	203
Total—Day and night ..	..		..		253		257		12		..		765		783		1,732		5,989		2,200	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		632·50 tons		192·75 tons		2·40 tons		..		841·50 tons		195·75 tons		173·20 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	827·65
Average weight per day of 24 hours	.. ..	118·23
Weight per foot width of metalled track	.. ..	14·78

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,210·45
Average weight per day of 24 hours	.. ..	172·92
Weight per foot width of metalled track	.. ..	21·62

Total weight of all traffic in seven days—2,038·10 tons.

(1) Location of observation—Mile 1·1 (Amlagora).

(2) Index No. and name of road—No. 25. Amlagora-Koyapat Road.

(3) Supervising officer— Babu R. K. Dinda, Sub-overseer, Satbankura.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—337·29 tons.

Date.	Motor traffic.										Non-motor traffic.										Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
26th January	..	..	..	..	..	..	..	..	..	..	..	..	78	37	51	60	24	4	456	55	116	5
27th January	..	..	..	..	..	..	..	..	..	..	..	..	133	85	82	2	25	1	428	35	144	17
28th January	..	..	..	..	..	..	..	..	..	..	..	..	146	63	95	78	44	6	632	115	171	27
29th January	..	..	..	..	..	..	..	..	..	..	..	..	157	113	131	50	39	7	1,379	162	220	15
30th January	2	..	..	..	..	..	2	..	..	..	..	..	279	110	186	76	41	7	880	135	232	11
31st January	..	..	..	..	4	..	..	..	..	..	..	..	136	145	200	132	49	2	920	173	291	..
1st February	..	..	..	..	2	1	..	..	..	..	..	..	299	..	243	..	46	..	892	2	231	..
Total ..	2	..	..	..	6	1	2	..	..	..	..	..	1,228	553	988	398	268	27	5,587	677	1,405	75
Total—Day and night ..	2		..		7		2		..		..		1,781		1,386		295		6,264		1,480	
	At 3·5 tons 7·00 tons		At 1 ton ..		At 2·5 tons 17·50 tons		At ·75 ton 1·50 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 1,959·10 tons		At ·25 ton 346·50 tons		At ·1 ton 29·50 tons					

Motor traffic	Tons.
Total weight in seven days	26·00
Average weight per day of 24 hours	3·71
Weight per foot width of road	0·15

Non-motor traffic	Tons.
Total weight in seven days	2,335·10
Average weight per day of 24 hours	333·58
Weight per foot width of road	13·89

Total weight of all traffic in seven days—2,361·10 tons.

(1) Location of observation—Mile 1·1 (Amalgora).

(2) Index No. and name of road—No. 25. Amlagora-Koyapat Road.

(3) Supervising officer—Babu R. K. Dinda, Sub-overseer, Satbankura.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—526·89 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
6th April	..	..	..	..	..	..	..	..	..	..	..	..	118	182	68	113	12	1	338	104	109	17
7th April	..	..	..	..	..	..	..	..	..	..	..	..	229	183	66	108	16	..	350	140	162	14
8th April	..	..	..	..	..	..	..	..	..	..	..	..	149	176	90	108	9	..	403	134	139	47
9th April	..	..	..	..	..	..	..	..	..	..	..	..	370	157	82	181	11	9	219	220	46	53
10th April	..	..	..	..	..	..	..	..	..	..	..	..	187	266	155	167	20	5	413	179	148	19
11th April	..	..	..	..	..	..	..	..	..	..	..	..	225	250	184	147	16	9	423	230	90	40
12th April	..	..	.	.	..	..	..	..	..	..	..	..	281	155	198	148	17	12	386	209	87	31
Total ..	..	..	.	.	..	..	..	..	..	..	..	..	1,559	1,369	843	972	101	36	2,532	1,216	781	221
Total—Day and night ..	..		..		..		..		..		..		2,928		1,815		137		3,748		1,002	
	At 3·5 tons ..		At 1 ton .		At 2·5 tons ..		At ·75 ton ..		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 3,220·80 tons		At ·25 ton 453·75 tons		At ·1 ton 13·70 tons					

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

	Tons.
Total weight in seven days	3,688·25
Average weight per day of 24 hours	526·89
Weight per foot width of road	21·91

Total weight of all traffic in seven days—3,688·25 tons.

(1) Location of observation—Mile 1·1 (Amlagora).

(2) Index No. and name of road—No. 25. Amlagora-Koyapat Road.

(3) Supervising officer—Babu R. K. Dinda, Sub-overseer, Sathankura.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—422·65 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries				Buses.		Cars and taxis		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
1st March	..	..	..	..	..	..	..	..	..	..	..	.	149	120	108	55	39	8	682	165	108	42
2nd March	..	..	..	..	..	..	..	..	..	..	..	..	212	82	129	82	36	4	537	68	137	37
3rd March	..	..	..	..	..	..	2	..	..	..	..	..	248	106	155	76	39	8	638	109	140	35
4th March	..	..	..	..	4	..	4	..	..	..	..	..	187	131	145	54	38	9	603	82	113	31
5th March	..	..	..	..	2	.	3	..	..	..	..	..	243	55	159	137	41	5	1,141	101	155	29
6th March	..	..	..	..	..	..	2	..	..	..	..	..	222	141	187	119	40	9	811	211	201	62
7th March	..	..	..	..	1	1	..	..	..	..	..	..	217	132	182	127	37	7	751	127	121	48
Total ..	..	..	..	..	7	1	11	..	..	..	..	..	1,478	767	1,065	650	270	50	5,163	863	975	284
Total—Day and night ..	..		..		8		11		..		..		2,245		1,715		320		6,026		1,259	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		20·00 tons		8·25 tons		..		..		2,469·50 tons		428·75 tons		32·00 tons					

Motor traffic	Tons.
Total weight in seven days	28·25
Average weight per day of 24 hours	4·04
Weight per foot width of road	0·17

Non-motor traffic	Tons.
Total weight in seven days	2,930·25
Average weight per day of 24 hours	418·61
Weight per foot width of road	17·44

Total weight of all traffic in seven days—2,958·50 tons.

(1) Location of observation—Mile 14·00 (junction of roads Nos. 5 and 26).

(2) Index No. and name of road—No. 26. Keshpur-Narajole Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—133·59 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
16th June	..	..	..	..	2	..	..	..	..	..	..	..	44	14	29	9	10	4	485	113	85	24
17th June	..	..	..	..	1	1	1	1	..	..	..	..	39	19	26	20	14	4	647	178	80	17
18th June	..	..	..	..	1	1	..	..	..	..	..	..	65	23	56	25	12	5	308	77	63	18
19th June	..	..	..	..	2	..	..	..	..	..	..	..	83	39	62	15	20	7	334	86	69	15
20th June	..	..	..	..	2	.	..	..	..	..	..	..	82	35	39	23	21	10	479	117	83	22
21st June	.	..	.	..	1	1	..	..	..	..	..	..	111	37	48	18	30	20	439	193	144	17
22nd June	..	..	..	..	2	2	..	..	..	..	.	..	74	32	40	24	22	5	255	97	80	20
Total ..	..	..	..	..	11	5	1	1	..	.	..	..	498	199	300	134	129	55	2,947	861	604	133
Total—Day and night ..	..		..		16		2		..		.		697		434		184		3,808		737	
	At 3·5 tons ..		At 1 ton ..		At 2·5 tons 40·00 tons		At ·75 ton 1·50 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 766·70 tons		At ·25 ton 108·50 tons		At ·1 ton 18·40 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	41·50
Average weight per day of 24 hours	.. ..	5·93
Weight per foot width of metalled track	.. ..	0·74

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	893·60
Average weight per day of 24 hours	.. ..	127·66
Weight per foot width of metalled track	.. ..	15·96

Total weight of all traffic in seven days—935·10 tons.

(1) Location of bservation—Mile 14·0 (junction of roads Nos. 5 and 26).

(2) Index No. and name of road—No. 26. Keshpur-Narajole Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—76·27 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded		Unloaded.										Loaded		Unloaded							
	Day	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.
1936.																						
9th December	..	..	..	..	2	1	1	..	..	..	..	.	10	45	4	5	15	2	507	162	60	6
10th December .. .	..	..	..	..	.	..	.	..	.	..	..	.	2	2	7	26	10	3	192	117	12	11
11th December .. .	..	..	..	.	1	..	.	..	.	..	..	.	2	35	1	44	13	21	181	212	21	67
12th December	..	..	..	..	15	6	3	..	..	..	..	.	42	21	18	8	37	12	432	193	34	26
13th December	..	..	..	..	2	2	.	..	..	..	.	..	25	81	7	5	26	15	300	246	101	54
14th December	..	..	.	..	1	..	..	1	..	.	..	1	7	12	3	13	15	3	216	119	26	4
15th December .. .	.	.	..	..	6	..	1	..	.	..	1	.	14	43	3	16	25	15	318	250	63	20
Total ..	..	..	..	..	28	9	5	1		.	1	1	102	239	43	117	141	71	2,146	1,299	317	188
Total—Day and night ..	..		..		37		6		..		2		341		160		212		3,445		505	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 tons		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At 1 ton					
	..		..		92·50 tons		4·50 tons		..		0·60 tons		375·10 tons		40·00 tons		21·20 tons					

Motor traffic		Tons.
Total weight in seven days	.. .. .	97·00
Average weight per day of 24 hours	.. .. ..	13·86
Weight per foot width of metalled track	.. . . .	1·73

Non-motor traffic		Tons.
Total weight in seven days	. ..	436·90
Average weight per day of 24 hours	.. ..	62·41
Weight per foot width of metalled track	.. .	7·80

Total weight of all traffic in seven days—533·90 tons.

(1) Location of observation—Mile 14·00 (junction of roads Nos. 5 and 26).

(2) Index No. and name of road—No. 26. Keshpur-Narajole Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—212·78 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded										Loaded.		Unloaded.							
	Day.	Night	Day.	Night	Day.	Night.	Day	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day	Night.
1937.																						
27th January	..	..	..	.	1	1	.	..	.	..	..	.	64	156	46	128	35	7	290	102	54	3
28th January	..	..	.	..	1	1	..	..	.	..	..	.	76	94	81	53	22	2	182	152	51	.
29th January	..	..	..	..	1	1	..	..	..	..	.		74	91	58	75	40	5	299	80	72	..
30th January	..	..	..	..	1	1	..	..	..	.	..	..	46	76	49	107	39	7	240	171	96	..
31st January	..	..	..	..	1	1	.	..	..	..	.		90	89	50	41	56	..	511	207	158	39
1st February	..	.	..	..	1	1	..	..	..	..	.	.	38	65	30	25	28	2	282	68	90	3
2nd February	..	..	.	.	1	1	..	..	..	..	..	.	34	118	30	46	31	1	212	70	52	..
Total	..	.	..		7	7	..	..	..	.	..	..	422	689	344	475	251	25	2,016	850	573	45
Total—Day and night	.		..		14		.		..				1,111		819		276		2,866		618	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		.		35·00 tons		..		..		.		1,222·10 tons		204·75 tons		27·60 tons					

Motor traffic

		Tons.
Total weight in seven days	.. ..	35·00
Average weight per day of 24 hours	.. ..	5·00
Weight per foot width of metalled track	.. ..	0·62

Non-motor traffic

		Tons
Total weight in seven days	.. ..	1,454·45
Average weight per day of 24 hours	. ..	207·78
Weight per foot width of metalled track	. ..	25·97

Total weight of all traffic in seven days—1,489·45 tons.

(1) Location of observation—Mile 21·10 (Debadanri).

(2) Index No. and name of road—No. 31. Ghatal-Bistupur Road.

(3) Supervising officer—Babu P. C. Bose, Sub-overseer.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—202·27 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
12th June	..	..	..	..	4	2	..	..	..	..	..	..	69	52	45	38	32	7	228	93	56	48
13th June	..	..	..	..	3	3	..	..	..	..	..	..	89	46	43	17	30	10	437	66	109	32
14th June	3	2	3	2	3	2	..	..	..	..	..	..	78	55	48	41	55	16	549	138	73	19
15th June	2	..	2	..	3	3	..	..	..	..	..	..	44	39	51	44	24	5	290	115	133	50
16th June	3	..	3	..	4	2	..	..	..	..	..	..	71	48	55	33	30	10	284	71	96	22
17th June	2	..	..	2	3	3	..	..	..	..	..	..	62	97	47	81	25	17	270	73	25	59
18th June	4	..	2	2	4	2	..	..	..	..	..	..	104	95	81	44	32	12	240	103	50	28
Total ..	14	2	10	6	24	17	..	..	..	..	..	..	517	432	370	298	228	77	2,298	659	512	258
Total—Day and night ..	16		16		41		..		..		..		949		668		305		2,957		800	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1 1 tons		At ·25 ton		At ·1 ton					
	56·00 tons		16·00 tons		102·50 tons		..		..		..		1,043·90 tons		167·00 tons		30·50 tons					

Motor traffic (Tons.):
Total weight in seven days .. .. 174·50
Average weight per day of 24 hours .. .. 24·93
Weight per foot width of metalled track .. .. 3·11

Non-motor traffic (Tons.):
Total weight in seven days .. .. 1,241·40
Average weight per day of 24 hours .. .. 177·34
Weight per foot width of metalled track .. .. 22·17

Total weight of all traffic in seven days—1,415·90 tons.

(1) Location of observation—Mile 21·1 (Debadanri).

(2) Index No. and name of road—No. 31. Ghatal-Bistupur Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—321·21 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
22nd December ..	..	..	..	..	2	..	..	..	..	..	..	..	36	101	53	75	18	28	265	312	23	37
23rd December ..	..	..	..	..	3	..	..	..	..	..	..	..	78	79	88	26	28	14	261	34	64	45
24th December ..	..	..	..	..	4	3	..	..	..	..	..	..	101	81	59	45	24	12	182	51	47	48
25th December ..	..	..	..	..	4	..	..	..	..	..	..	..	98	93	89	58	24	16	180	124	48	56
26th December ..	..	..	..	..	2	..	..	..	..	..	..	..	82	132	65	84	38	18	434	114	31	25
27th December ..	..	..	..	..	2	..	..	..	..	..	..	..	167	222	121	229	28	10	261	148	77	14
28th December ..	..	..	..	..	2	..	..	..	..	..	..	..	245	180	136	58	50	17	361	87	74	57
Total ..	..	..	..	..	19	3	..	..	..	..	..	..	807	888	611	575	210	115	1,944	870	364	282
Total—Day and night ..	..		..		22		..		..		..		1,695		1,186		325		2,814		646	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 tons		At ·1 ton					
	..		..		55·00 tons		..		..		..		1,864·50 tons		296·50 tons		32·50 tons					

Motor traffic		Tons.
Total weight in seven days	.. ..	55·00
Average weight per day of 24 hours	.. ..	7·86
Weight per foot width of metalled track	.. ..	0·98

Non-motor traffic		Tons.
Total weight in seven days	.. ..	2,193·50
Average weight per day of 24 hours	.. ..	313·35
Weight per foot width of metalled track	.. ..	39·17

Total weight of all traffic in seven days—2,248·50 tons.

(1) Location of observation—Mile 21·1 (Debadanri).

(2) Index No. and name of road—No. 31. Ghatal-Bistupur Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—462·40 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.
1937.																						
11th March	..	..	..	..	2	..	..	..	..	..	..	..	206	258	69	172	12	5	115	60	27	13
12th March	..	..	..	..	6	..	..	..	..	..	..	.	110	137	126	127	34	3	284	105	87	12
13th March	..	..	..	..	5	1	..	..	.	..	..	.	94	136	117	101	30	6	325	152	43	14
14th March	..	..	..	..	4	..	..	..	..	..	..	..	224	185	224	148	32	..	307	95	84	20
15th March	..	..	..	..	6	..	..	..	..	.	..	..	174	101	77	36	45	16	249	90	83	28
16th March	..	..	..	..	5	..	..	..	..	..	..	.	253	148	172	92	71	23	271	164	57	40
17th March	..	..	..	..	5	..	..	..	..	..	..	..	277	146	160	77	47	10	255	104	77	23
Total ..	..	..	..	..	33	1	..	..	..	.	..	..	1,338	1,111	945	753	271	63	1,806	770	458	150
Total—Day and night ..	..		..		34		..		.		.		2,449		1,698		334		2,576		608	
	At 3·5 tons		At 1 ton		At ·25 ton		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		85·00 tons		..		..		..		2,693·90 tons		424·50 tons		33·40 tons					

Motor traffic		Tons.
Total weight in seven days	.. ..	85·00
Average weight per day of 24 hours	.. ..	12·14
Weight per foot width of metalled track	.. ..	1·52

Non-motor traffic		Tons
Total weight in seven days	. .	3,151·80
Average weight per day of 24 hours	.. ..	450·26
Weight per foot width of metalled track	.. ..	56·28

Total weight of all traffic in seven days—3,236·80 tons.

(1) Location of observation—Mile 9·1 (Tangra).

(2) Index No. and name of road—No. 36. Khargpur-Kessiary Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—519·06 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
24th June	..	..	..	..	3	1	33	8	1	1	60	13	271	156	173	50	153	21	858	201	540	84
25th June	..	..	..	..	1	1	50	8	1	1	49	9	401	171	388	71	439	30	2,956	857	262	63
26th June	..	..	..	..	4	2	29	10	..	..	26	11	190	75	221	75	263	23	927	385	182	52
27th June	2	.	2	..	4	1	17	7	4	..	34	9	275	61	319	46	197	27	926	327	335	51
28th June	..	..	..	..	..	..	35	9	1	1	14	4	325	102	115	67	473	41	3,110	984	440	57
29th June	..	..	..	..	1	..	23	4	..	..	24	7	106	58	85	37	158	39	1,388	857	268	27
30th June	1	.	1	..	1	1	23	3	..	..	15	5	129	72	110	43	104	42	585	279	234	22
Total ..	3	..	3	..	14	6	210	49	7	3	222	58	1,697	695	1,441	389	1,787	223	10,750	3,890	2,261	356
Total—Day and night .	3		3		20		259		10		280		2,392		1,830		2,010		14,640		2,617	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	10·5 tons		3·00 tons		50·00 tons		194·20 tons		2·00 tons		84·00 tons		2,631·20 tons		457·50 tons		201·00 tons					

Motor traffic.	Tons.
Total weight in seven days	259·70
Average weight per day of 24 hours	37·10
Weight per foot width of metalled track	4·63

Non-motor traffic.	Tons.
Total weight in seven days	3,373·70
Average weight per day of 24 hours	481·96
Weight per foot width of metalled track	60·24

Total weight of all traffic in seven days—3,633·40 tons.

(1) Location of observation—Mile 9·1 (Tangra).

(2) Index No. and name of road—No. 36. Khargpur-Kessiary Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—350·41 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.				4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.												Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.			Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																								
25th December ..	..	..	..	..	8	2	5	..	..	..			..	..	65	116	57	37	124	44	469	194	20	16
26th December ..	..	..	..	..	2	..	10	5	1	..			..	..	147	195	55	55	216	35	602	309	45	..
27th December ..	..	..	..	..	..	3	6	..	..	..			6	..	128	138	290	118	320	96	1,096	646	180	82
28th December ..	..	..	..	..	8	1	3	7	..	..			3	2	70	74	60	34	157	61	483	237	26	..
29th December ..	..	..	..	..	5	..	5	..	..	..			3	3	75	96	83	32	130	36	532	234	10	..
30th December ..	..	..	..	..	6	5	8	1	4	..			6	..	96	62	71	13	142	46	523	207	29	..
31st December	..	..	..	..	1	1	5	2	..	..			14	2	308	75	248	61	299	88	1,158	381	508	40
Total ..	..	..	..	..	30	12	42	15	5	..			32	7	889	756	864	350	1,388	406	4,863	2,208	818	138
Total—Day and night ..	..		..		42		57		5				39		1,645		1,214		1,794		7,071		956	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton				At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		105·00 tons		42·75 tons		1·00 tons				11·70 tons		1,809·50 tons		303·50 tons		179·40 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	148·75
Average weight per day of 24 hours	.. ..	21·25
Weight per foot width of metalled track	.. ..	2·65

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	2,304·10
Average weight per day of 24 hours	.. ..	329·16
Weight per foot width of metalled track	.. ..	41·14

Total weight of all traffic in seven days—2,452·85 tons.

(1) Location of observation—Mile 9·1 (Tangra).

(2) Index No. and name of road—No. 36. Khargpur-Kessiary Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board (Sadar).

(4) Nature of road surface—Laterite stone-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—543·53 tons.

Date.	Motor traffic.												Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
12th February ..	2	..	..	..	5	..	17	6	9	..	20	4	207	36	125	34	94	27	515	213	140	..
13th February ..	1	..	..	..	6	..	20	1	..	..	32	4	94	170	39	103	266	57	971	241	122	..
14th February ..	..	..	..	..	6	2	25	10	7	..	21	4	332	76	185	122	282	50	1,673	480	245	33
15th February ..	..	..	..	..	4	..	13	3	9	..	18	2	159	127	174	44	248	85	1,166	281	115	17
16th February ..	1	..	1	..	3	..	21	14	6	..	22	36	258	238	203	133	299	108	674	1,593	113	23
17th February ..	2	..	1	..	7	1	19	15	5	..	26	4	163	204	209	164	181	83	1,125	421	141	45
18th February ..	1	..	..	..	5	..	27	9	11	..	18	16	321	115	297	128	239	112	1,199	353	256	..
Total ..	7	..	2	..	36	3	142	58	47	..	157	70	1,534	966	1,232	728	1,609	522	7,323	3,582	1,132	118
Total—Day and night ..	7		2		39		200		47		227		2,500		1,960		2,131		10,905		1,250	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	24·50 tons		2·00 tons		97·50 tons		150·00 tons		9·40 tons		68·10 tons		2,750 00 tons		490·00 tons		213·10 tons					

Motor traffic		Tons.
Total weight in seven days	.. .. ..	283·40
Average weight per day of 24 hours	.. .. ..	40·50
Weight per foot width of metalled track	.. .. ..	5·06

Non-motor traffic		Tons.
Total weight in seven days	.. ..	3 521·20
Average weight per day of 24 hours	.. ..	503·03
Weight per foot width of metalled track	.. ..	62·88

Total weight of all traffic in seven days—3,804·60 tons.

(1) Location of observation—Mile 3·36 (Balichak).

(2) Index No. and name of road—No. 37. Debra-Sabang Road.

(3) Supervising officer—Babu P. C. Bose, Sub-overseer.

(4) Nature of road surface—Quartz-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—760·27 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.
1936.																						
27th May	18	..	18	..	6	..	4	1	..	..	..	..	79	163	271	49	30	43	643	200	113	29
28th May	19	..	20	..	7	..	7	2	..	..	..	..	263	401	376	137	54	51	839	201	479	58
29th May	18	..	18	..	6	..	5	1	..	..	..	..	92	132	152	180	42	48	319	190	327	75
30th May	19	..	19	..	7	..	7	1	..	..	..	..	400	267	496	372	101	61	1,503	569	340	24
31st May	18	..	20	..	6	..	9	1	..	..	..	..	436	104	162	140	52	28	1,441	421	868	53
1st June	19	..	19	..	7	..	10	1	..	..	..	..	238	290	120	422	90	28	1,339	456	705	23
2nd June	18	..	17	..	6	..	2	2	..	..	..	..	142	330	120	383	52	35	1,025	407	755	80
Total ..	129	..	131	..	45	..	44	9	..	..	..	..	1,650	1,687	1,697	1,683	421	294	7,109	2,444	3,607	342
Total—Day and night ..	129		131		45		53		..		..		3,337		3,380		715		9,553		3,949	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	451·50 tons		131·00 tons		112·50 tons		39·75 tons		..		..		3,670·70 tons		845·00 tons		71·50 tons					

Motor traffic:

				Tons.
Total weight in seven days	..	..	..	734·75
Average weight per day of 24 hours	..	..	..	104·96
Weight per foot width of metalled track	..	..	..	13·12

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	4,587·20
Average weight per day of 24 hours	..	..	655·31
Weight per foot width of metalled track	..	..	81·91

Total weight of all traffic in seven days—5,321·95 tons.

(1) Location of observation—Mile 3·36 (Balichak).

(2) Index No. and name of road—No. 37. Debra-Sabang Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Quartz-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—995·27 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
	Loaded.		Unloaded.										Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.																								
6th January	..	..	..	..	6	..	1	..	..	..	..	..	118	142	125	163	24	11	225	152	65	5		
7th January	..	..	..	..	10	2	16	14	..	..	..	..	388	174	278	204	81	21	628	220	203	31		
8th January	..	..	..	..	9	2	9	2	..	..	..	..	1,078	276	628	214	71	24	2,725	612	486	51		
9th January	..	..	..	..	6	1	4	1	..	..	..	..	354	148	141	153	71	15	549	207	197	34		
10th January	..	..	..	..	3	..	9	1	..	..	..	..	349	206	225	146	71	15	403	208	99	22		
11th January	..	..	..	..	4	..	4	..	..	..	..	..	754	668	379	824	97	27	3,683	917	491	41		
12th January	..	..	..	..	9	3	10	7	..	..	..	..	374	174	365	107	56	12	615	156	107	10		
Total ..	..	..	..	..	47	8	53	25	..	..	..	..	3,415	1,788	2,141	1,811	471	125	8,828	2,472	1,648	194		
Total—Day and night ..	..		..		55		78		..		..		5,203		3,952		596		11,300		1,842			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At 1 ton							
	..		..		137·50 tons		58·50 tons		..		..		5,723·30 tons		988·00 tons		59·60 tons							

Motor traffic:

	Tons.
Total weight in seven days	196·00
Average weight per day of 24 hours	28·00
Weight per foot width of metalled track	3·50

Non-motor traffic:

	Tons.
Total weight in seven days	6,770·90
Average weight per day of 24 hours	967·27
Weight per foot width of metalled track	120·91

Total weight of all traffic in seven days—6,966·90 tons.

(1) Location of observation—Mile 3·36 (Balichak).

(2) Index No. and name of road—No. 37. Debra-Sabang Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-overseer, Balichak.

(4) Nature of road surface—Quartz-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—1,342·23 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
25th March	..	..	..	..	3	..	4	..	..	..	..	..	255	214	252	210	78	42	232	199	82	28
26th March	5	..	5	..	4	..	10	..	..	..	..	..	665	457	482	227	59	31	1,413	428	49	13
27th March	10	2	10	2	4	..	6	..	..	..	..	..	341	535	525	278	75	40	554	275	261	78
28th March	5	..	5	2	4	..	4	..	..	..	..	..	465	840	849	244	111	28	734	262	333	74
29th March	6	..	6	..	6	..	6	..	..	..	..	..	259	700	720	182	120	29	1,991	333	268	47
30th March	15	..	14	2	6	..	5	..	..	..	..	..	897	802	302	197	62	29	424	222	76	54
31st March	5	..	5	..	4	..	2	..	..	..	..	..	407	207	277	237	52	19	470	184	66	25
Total ..	46	2	45	6	31	..	37	..	..	..	..	..	3,289	3,755	3,407	1,575	557	218	5,818	1,903	1,135	319
Total—Day and night ..	48		51		31		37		..		..		7,044		4,982		775		7,721		1,454	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	168·00 tons		51·00 tons		77·50 tons		27·75 tons		..		..		7,748·40 tons		1,245·50 tons		77·50 tons					

Motor traffic.		Tons.
Total weight in seven days	.. .. ..	324·25
Average weight per day of 24 hours	.. .. ..	46·32
Weight per foot width of metalled track	.. .. ..	5·79

Non-motor traffic.		Tons.
Total weight in seven days	.. ..	9,071·40
Average weight per day of 24 hours	.. ..	1,295·91
Weight per foot width of metalled track	.. ..	161·99

Total weight of all traffic in seven days—9,395·65 tons.

(1) Location of observation—Mile 2·50 (Durmut).

(2) Index No. and name of road—No. 38. Contai-Tamluk Road.

(3) Supervising officer—Babu S. C. Bhattacharjee, Sub-overseer.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—79·97 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
11th June	..	..	..	..	14	..	13	..	..	..	..	..	11	5	10	4	38	8	620	275	86	29
12th June	..	..	..	..	18	..	15	..	..	..	..	..	18	7	7	5	78	16	1,324	463	73	21
13th June	..	..	..	..	16	..	6	..	..	..	..	..	13	3	9	5	38	9	1,263	527	31	9
14th June	..	..	..	..	19	..	10	..	..	..	..	..	3	..	1	..	24	9	621	241	24	10
15th June	..	..	..	..	14	..	4	..	..	..	..	..	20	6	13	4	20	6	1,325	442	95	21
16th June	..	..	..	..	27	..	12	1	..	..	..	..	11	2	11	5	37	7	1,378	509	23	9
17th June	..	..	..	..	19	..	13	..	..	..	..	..	14	7	12	3	30	6	782	383	64	21
Total ..	..	..	..	..	127	..	73	1	..	..	..	..	90	30	63	26	265	61	7,313	2,840	396	120
Total—Day and night ..	..		..		127		74		..		..		120		89		326		10,153		516	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		317·50 tons		55·50 tons		..		..		132·00 tons		22·25 tons		32·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	373·00
Average weight per day of 24 hours	.. .. ..	53·28
Weight per foot width of metalled track	.. .. ..	6·66

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	186·85
Average weight per day of 24 hours	.. ..	26·69
Weight per foot width of metalled track	.. ..	3·33

Total weight of all traffic in seven days—559·85 tons.

(1) Location of observation—Mile 2·5 (Durmut).

(2) Index No. and name of road—No. 38. Contai-Tamluk Road.

(3) Supervising officer—Babu P. K. Maity, Sub-overseer.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—105·90 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
3rd December	..	..	..	..	14	1	8	4	..	..	..	..	28	11	23	5	120	32	1,485	174	91	20
4th December	..	..	..	..	24	1	6	1	..	..	..	..	27	8	16	8	117	32	1,335	169	76	13
5th December	..	..	..	..	20	2	6	..	..	..	..	.	30	9	19	18	117	34	927	186	62	20
6th December	..	..	..	..	6	..	7	..	..	..	..	..	37	22	32	8	100	28	1,247	112	83	13
7th December	..	..	..	..	13	1	3	..	..	..	..	..	43	1	47	10	102	27	1,478	80	124	11
8th December	..	..	..	..	7	1	5	2	..	..	..	..	22	3	24	2	131	8	1,011	123	36	12
9th December	..	..	..	..	8	2	6	..	..	..	..	..	24	8	18	7	95	14	835	134	45	8
Total ..	..	..	..	..	92	8	41	7	..	..	..	..	211	62	179	58	782	175	8,318	978	519	97
Total—Day and night ..	..		..		100		48		..		..		273		237		957		9,296		616	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		250 00 tons		36·00 tons		..		..		300·30 tons		59·25 tons		95·70 tons					

Motor traffic.	Tons.
Total weight in seven days	286·00
Average weight per day of 24 hours	40·86
Weight per foot width of metalled track	5·11

Non-motor traffic.	Tons.
Total weight in seven days	455·25
Average weight per day of 24 hours	65·04
Weight per foot width of metalled track	8·13

Total weight of all traffic in seven days—741·25 tons.

(1) Location of observation—Mile 2·50 (Durmut).

(2) Index No, and name of road—No. 38. Contai-Tamluk Road.

(3) Supervising officer—Babu S. C. Bhattacharjee, Sub-overseer, Contai.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—115·18 tons

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
7th January ..	..	..	..	..	13	2	6	1	..	..	..	..	26	30	28	13	83	11	815	136	77	13
8th January ..	..	..	..	..	12	..	1	..	..	..	..	..	53	8	36	21	95	21	1,203	77	55	12
9th January ..	..	..	..	..	14	..	5	..	..	..	..	..	50	13	44	20	61	17	956	84	64	17
0th January ..	..	..	..	..	19	1	1	2	..	..	..	..	36	4	25	5	65	7	560	111	41	13
1st January ..	..	..	..	..	7	..	1	..	..	..	..	..	40	6	52	6	50	6	1,065	97	38	8
st February ..	..	..	..	..	15	..	5	..	..	..	..	..	43	3	47	1	61	6	969	48	65	10
nd February ..	..	..	..	..	12	..	5	..	..	..	..	..	53	3	56	4	53	6	603	51	23	3
Total ..	..	..	..	..	92	3	24	3	..	..	..	..	301	67	288	70	468	74	6,171	604	363	76
Total—Day and night ..	..		..		95		27		..		..		368		358		542		6,775		439	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton.		At ·1 ton					
	..		..		237·50 tons		20 25 tons		..		..		404·80 tons.		89 50 tons		54·20 tons					

Motor traffic		Tons.
Total weight in seven days	.. .. ..	257·75
Average weight per day of 24 hours	.. .. ..	36·82
Weight per foot width of metalled track	.. .. ..	4·60

Non-motor traffic		Tons.
Total weight in seven days	.. ..	548·50
Average weight per day of 24 hours	.. ..	78·36
Weight per foot width of metalled track	.. ..	9 80

Total weight of all traffic in seven days—806·25 tons.

(1) Location of observation—Mile 5·05 (Lakshya).

(2) Index No. and name of road—No. 41. Mahisadal-Chaitanpur Road.

(3) Supervising officer—Babu R. C. Sirkar, Subdivisional Officer, District Board (Tamluk).

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—11·64 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
1st December	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	35	5	244	48	27	..
2nd December	..	..	..	..	2	..	1	..	..	..	..	..	..	1	..	..	31	7	225	41	22	..
3rd December	..	..	..	..	1	1	..	..	..	..	..	..	6	..	..	..	26	8	256	52	25	..
4th December	..	..	..	..	1	1	1	2	..	..	..	..	..	..	..	..	37	7	677	76	18	..
5th December	..	..	..	..	1	1	2	1	..	..	..	..	..	..	..	..	39	6	296	44	24	..
6th December	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	31	14	262	44	25	..
7th December	..	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	45	12	803	47	31	..
Total ..	..	..	..	..	10	5	4	4	..	..	..	..	6	1	..	..	244	59	2,763	352	172	..
Total—Day and night ..	..		..		15		8		..		..		7		..		303		3,115		172	
	At 2·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		37·50 tons		6·00 tons		..		..		7·70 tons		..		30·30 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	43·50
Average weight per day of 24 hours	.. ..	6·21
Weight per foot width of road	.. ..	0·41

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	38·00
Average weight per day of 24 hours	.. ..	5·43
Weight per foot width of road	.. ..	0·36

Total weight of all traffic in seven days—81·50 tons.

(1) Location of observation—Mile 5·05 (Lakshya).

(2) Index No. and name of road—No. 41. Mahisadal-Chaitanpur Road.

(3) Supervising officer—Babu R. C. Sircar, Subdivisional Officer, District Board (Tamluk).

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—24·95 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
12th January	..	..	..	..	2	..	3	..	..	..	..	..	36	3	7	..	74	20	692	121	81	..
13th January	..	..	..	..	1	2	1	2	..	..	..	..	3	..	2	..	99	22	1,533	215	37	..
14th January	..	..	..	..	2	1	..	..	..	..	..	..	1	..	..	..	70	20	437	77	45	..
15th January	..	..	..	..	2	..	..	..	..	..	..	..	1	..	4	..	52	15	667	59	43	..
16th January	..	..	..	..	3	..	2	..	..	..	..	..	4	..	1	..	45	21	577	94	36	..
17th January	..	..	..	..	2	..	..	..	..	..	..	..	1	..	4	..	61	14	507	58	36	..
18th January	..	..	..	..	1	1	1	1	..	..	..	..	1	..	2	..	99	35	847	70	58	..
Total ..	..	..	..	..	13	4	7	3	..	..	..	..	47	3	20	..	500	147	5,260	694	336	..
Total—Day and night ..	..		..		17		10		..		..		50		20		647		5,954		336	
	At 3·5 tons ..		At 1 ton ..		At 2·5 tons 42·50 tons		At ·75 ton 7·50 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 55·00 tons		At ·25 ton 5·00 tons		At ·1 ton 64·70 tons					

Motor traffic:

					Tons.
Total weight in seven days	..	..	..	..	50·00
Average weight per day of 24 hours	..	..	..	..	7·14
Weight per foot width of road	..	..	..	..	0·47

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	124·70
Average weight per day of 24 hours	..	..	17·81
Weight per foot width of road	..	..	1·19

Total weight of all traffic in seven days—174·70 tons.

(1) Location of observation—Mile 5·05 (Lakshya).

(2) Index No. and Name of road—No. 41. Mahisadal-Chaitanpur Road.

(3) Supervising officer—Babu R. C. Sircar, Subdivisional Officer, District Board (Tamluk).

(4) Nature of road surface—Unmetalled.

(5) Full width of road—15′ 0″.

(6) Average weight in tons of all traffic in 24 hours—22·79 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
14th March	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	114	25	491	59	49	..
15th March	..	..	..	..	..	..	..	..	..	..	..	..	6	..	4	..	48	20	740	64	41	..
16th March	..	..	..	..	2	..	4	..	..	..	..	..	10	..	6	..	63	22	638	45	19	..
17th March	..	..	..	..	1	..	7	1	..	..	..	..	..	..	1	..	62	26	483	44	37	..
18th March	..	..	..	..	2	..	6	..	..	..	..	..	1	..	1	..	51	22	490	76	32	..
19th March	..	..	..	..	1	1	1	1	..	..	..	..	8	..	10	..	36	21	991	71	30	..
20th March	..	..	..	..	5	1	1	1	..	..	..	..	12	..	13	..	60	16	687	81	27	..
Total ..	..	..	..	..	11	2	19	3	..	..	..	..	39	..	36	..	434	152	4,520	440	235	..
Total—Day and night ..	..		..		13		22		..		..		39		36		586		4,960		235	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		32·50 tons		16·50 tons		..		..		42·90 tons		9·00 tons		58·60 tons					

Motor traffic:

	Tons.
Total weight in seven days	49·00
Average weight per day of 24 hours	7·00
Weight per foot width of road	0·46

Non-motor traffic:

	Tons.
Total weigth in seven days	110·50
Average weight per day of 24 hours	15·79
Weight per foot width of road	1·05

Total weight of all traffic in seven days—159·50 tons.

(1) Location of observation—Mile 3·4 (Ajodhyapur).

(2) Index No. and name of road—No. 43. Contai-Khajuri Road.

(3) Supervising officer—Babu P. K. Maity, Sub-overseer.

(4) Nature of road surface—Brick-metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—73·92 tons.

Date.	Motor traffic.												Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.				4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.				Foot passengers.		Cattle.	
	Loaded.		Unloaded.												Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.			Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.			Day.	Night.	Day.	Night.
1936.																										
2nd June	..	..	..	..	..		2	..	..	..			..	..	21	3	15	10	36	9			862	332	33	25
3rd June	..	..	..	..	..	..	5	1	..	..			..	..	30	9	16	8	52	14			1,086	438	30	22
4th June	..	..	..	..	..	..	..	..	..	..			..	..	22	6	12	7	45	11			1,275	480	62	43
5th June	..	..	..	..	..	..	10	2	..	..			..	..	48	8	33	13	38	14			1,160	437	73	35
6th June	..	..	..	..	..	..	2	..	..	..			..	..	32	12	19	15	52	16			1,459	501	54	27
7th June	..	..	..	..	2	..	1	1	..	..			..	..	50	15	45	17	111	19			1,906	625	73	38
8th June	..	..	..	..	..	..	..	..	..	..			..	..	68	17	57	14	60	13			1.372	495	76	41
Total ..	..	..	..	..	2	..	20	4	..	..			..	..	271	70	197	84	394	96			9,120	3,308	401	231
Total—Day and night ..	..		..		2		24		..				..		341		281		490				12,428		632	
	At 3·5 tons		At 1 ton		At 2·5 ton		At ·75 tons		At ·20 ton				At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	..		..		5·00 tons		18·00 tons		..				..		375·10 tons		70·25 tons		49·00 tons							

Motor traffic:

		Tons.
Total weight in seven days	.. ..	23·00
Average weight per day of 24 hours	.. ..	3·30
Weight per foot width of metalled track	.. ..	0·41

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	494·35
Average weight per day of 24 hours	.. ..	70·62
Average per foot width of metalled track	.. ..	8·83

Total weight of all traffic in seven days—517·35 tons.

(1) Location of observation—Mile 3·4 (Ajodhyapur).

(2) Index No. and name of road—No. 43. Contai-Khedgeri Road.

(3) Supervising officer—Babu P. K. Maity, Sub-overseer.

(4) Nature of road surface—Brick metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—80·17 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night	Day.	Night.
1936																						
25th November ..	..	..	..	..	..	..	9	1	..	..	..	..	33	15	22	11	94	57	1,215	246	43	5
26th November ..	..	..	..	..	5	1	10	2	..	..	..	..	73	2	46	5	113	34	1,181	136	62	2
27th November ..	..	..	..	..	..	..	2	..	..	..	..	..	30	1	17	14	85	25	866	165	58	4
28th November ..	..	..	..	..	..	..	5	..	..	..	..	..	24	4	19	2	80	42	911	89	50	26
29th November ..	..	..	..	..	2	..	8	2	..	..	..	..	23	1	25	2	72	27	929	109	36	12
30th November ..	..	..	..	..	..	..	..	..	..	..	..	..	44	16	25	11	69	27	1,036	116	52	17
1st December ..	..	..	..	..	..	..	4	..	..	..	..	..	46	14	37	22	106	28	890	113	74	22
Total ..	..	..	..	..	7	1	38	5	..	..	..	..	273	53	191	67	619	240	7,028	994	375	88
Total—Day and night ..	..		..		8		43		..		..		326		258		859		8,022		463	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		20·00 tons		32·25 tons		..		..		358·60 tons		64·50 tons		85·90 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	52·25
Average weight per day of 24 hours	.. ..	7·46
Weight per foot width of metalled track	.. ..	0·93

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	509·00
Average weight per day of 24 hours	.. ..	72·71
Weight per foot width of metalled track	.. ..	9·09

Total weight of all traffic in seven days—561·25 tons.

(1) Location of observation—Mile 3·4 (Ajodhyapur).

(2) Index No. and name of road—No. 43. Contai-Khedgeri Road.

(3) Supervising officer—Babu A. K. Dutt, Subdivisional Officer, District Board (Contai).

(4) Nature of road surface—Brick metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—157·48 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
19th January ..	..	..	..	..	4	1	3	..	..	..	..	..	60	23	54	41	72	12	685	146	13	4
20th January ..	..	..	..	..	..	..	10	5	..	..	..	..	82	48	76	20	69	17	744	189	36	13
21st January ..	..	..	..	..	8	..	4	2	..	..	..	..	86	33	71	27	78	9	925	164	53	25
22nd January ..	..	..	..	..	4	1	9	1	..	..	..	..	65	29	69	26	67	7	780	118	36	20
23rd January ..	..	..	..	..	3	1	4	1	..	..	..	..	70	18	54	17	90	6	841	107	24	13
24th January ..	..	..	..	..	2	..	9	1	..	..	..	..	83	16	52	30	95	14	1,135	116	30	3
25th January ..	..	..	..	..	2	1	2	..	..	..	..	..	74	22	53	21	94	10	683	121	23	3
Total ..	..	..	..	..	23	4	41	10	..	..	..	..	520	189	429	182	565	75	5,776	961	215	81
Total—Day and night ..	..		..		27		51		..		..		709		611		640		6,737		296	
	At 3·5 tons ..		At 1 ton ..		At 2·5 tons 67·50 tons		At ·75 ton 38·25 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 779·90 tons		At ·25 ton 152·75 tons		At ·1 ton 64·00 tons					

	Motor traffic, Tons.	Non-motor traffic, Tons.
Total weight in seven days	105·75	996·65
Average weight per day of 24 hours	15·10	142·38
Weight per foot width of metalled track	1·90	17·79

Total weight of all traffic in seven days—1,102·40 tons.

(1) Location of observation—Miles 11·0 (Mohanpur).

(2) Index No. and name of road—No. 45. Balighai-Solpata Road.

(3) Supervising officer—Babu P. K. Sircar, Work sarkar.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—84·29 tons.

Date.	Motor traffic.										Non-motor traffic.										
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.
	Loaded.		Unloaded.										Loaded.		Unloaded.						
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
3rd July ..	..	..	..	..	..	..	..	..	..	..	..	..	42	23	29	23	..	..	1,282	543	53	23
4th July ..	..	..	..	..	..	..	..	..	..	..	..	..	41	19	33	19	1	..	982	453	77	37
5th July ..	..	..	..	..	..	..	..	..	..	..	..	..	23	17	24	14	..	..	732	323	131	35
6th July ..	..	..	..	..	..	..	..	..	..	..	..	..	43	22	45	21	..	..	1,378	763	87	33
7th July ..	..	..	..	..	..	..	..	..	..	..	..	..	53	23	50	20	..	..	783	269	170	60
8th July ..	..	..	..	..	..	..	..	..	..	..	..	..	64	22	35	15	..	..	647	286	103	43
9th July ..	..	..	..	..	..	..	..	..	..	..	..	..	43	17	26	17	..	..	395	170	108	40
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	309	143	242	129	1	..	6,199	2,807	729	271
Total—Day and night ..	..		..		..		..		..		..		452		371		1		9,006		1,000	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		497·20 tons		92·75 tons		0·10 ton					

Motor traffic	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of metalled track	..

Non-motor traffic	Tons.
Total weight in seven days	590·05
Average weight per day of 24 hours	84·29
Weight per foot width of metalled track	..

Total weight of all traffic in seven days—590·05 tons.

(1) Location of observation—Miles 11·0 (Mohanpur).

(2) Index No. and name of road—No. 45. Balighai-Solpata Road.

(3) Supervising officer—Babu H. Ghose, Sub-overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—168·31 tons.

Motor traffic

Date.	Lorries. Loaded. Day.	Lorries. Loaded. Night.	Lorries. Unloaded. Day.	Lorries. Unloaded. Night.	Buses. Day.	Buses. Night.	Cars and taxis. Day.	Cars and taxis. Night.	Motor cycles. Day.	Motor cycles. Night.
1936.										
18th December ..	..	..	..	..	..	..	..	..	..	..
19th December ..	..	..	..	..	..	..	..	..	..	..
20th December ..	..	..	..	..	..	..	2	..	..	.
21st December ..	..	..	..	..	..	..	..	..	..	.
22nd December ..	..	..	..	..	..	..	..	..	..	..
23rd December ..	..	..	..	..	..	..	..	..	..	..
24th December ..	..	..	..	..	..	..	..	..	.	..
Total ..	..	..	..	..	..	..	2	..	..	..
Total—Day and night ..	..		..		..		2		..	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton	
	..		..		..		1·50 tons		..	

	Tons.
Total weight in seven days	1·50
Average weight per day of 24 hours	0·21
Weight per foot width of road	0·01

Non-motor traffic.

Date.	4-wheeled carts, hackney carriages, etc. Day.	4-wheeled carts, hackney carriages, etc. Night.	Bullock carts. Loaded. Day.	Bullock carts. Loaded. Night.	Bullock carts. Unloaded. Day.	Bullock carts. Unloaded. Night.	Other types of vehicles including rickshaws and cycles. Day.	Other types of vehicles including rickshaws and cycles. Night.	Foot passengers. Day.	Foot passengers. Night.	Cattle. Day.	Cattle. Night.
1936.												
18th December ..	..	..	115	53	96	91	19	6	657	145	158	36
19th December ..	..	..	80	26	76	40	23	8	515	136	165	44
20th December ..	..	..	86	67	80	51	17	9	866	139	154	69
21st December ..	..	..	96	35	65	56	17	6	503	94	174	55
22nd December ..	..	..	87	49	74	39	20	10	548	60	144	92
23rd December ..	..	..	78	22	55	33	14	18	622	85	223	40
24th December ..	..	.	52	19	45	23	12	13	628	81	113	29
Total ..	.	.	594	271	491	333	122	70	4,339	730	1,131	364
Total—Day and night ..	..		865		824		192		5,069		1,495	
	At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		951 50 tons		206·00 tons		19·20 tons					

	Tons.
Total weight in seven days	1,176·70
Average weight per day of 24 hours	168·10
Weight per foot width of metalled track	7·00

Total weight of all traffic in seven days—1,178·20 tons.

(1) Location of observation—Mile 0·1 (Danton Bazar).

(2) Index No. and name of road—No. 49. Danton-Gopiballavpur Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board, Sadar.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—32·12 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
2nd July ..	..	..	..	..	..	..	..	..	..	..	..	..	6	6	11	7	5	4	907	380	27	15
3rd July ..	..	..	..	..	..	..	..	..	..	..	..	..	24	10	15	8	14	4	1,383	333	101	27
4th July ..	..	..	..	..	..	..	..	..	..	..	..	..	40	12	20	11	34	7	1,852	757	87	29
5th July ..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	5	1	786	311	28	12
6th July ..	..	..	..	..	..	..	..	..	..	..	..	..	8	10	7	8	6	4	719	410	32	20
7th July ..	..	..	..	..	.	..	..	..	..	..	..	..	8	13	8	8	11	5	1,103	469	63	38
8th July ..	..	..	..	..	..	..	..	..	..	..	..	..	10	15	8	11	13	8	1,155	417	65	32
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	99	66	72	53	88	33	7,905	3,077	403	173
Total—Day and night ..	..		..		..		..		..		..		165		125		121		10,982		576	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		181·50 tons		31·25 tons		12·10 tons					

Motor traffic: Tons.
Total weight in seven days .. ..
Average weight per day of 24 hours .. ..
Weight per foot width of road .. ..

Non-motor traffic: Tons.
Total weight in seven days .. .. 224·85
Average weight per day of 24 hours .. .. 32·12
Weight per foot width of road .. .. 1·34

Total weight of all traffic in seven days—224·85 tons.

(1) Location of observation—Mile 0·1 (Danton Bazar).

(2) Index No. and name of road—No. 49. Danton-Gopiballavpur Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer, District Board, Sadar.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—104·56 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
3rd January ..	..	..	..	..	..	..	..	..	..	..	..	..	53	12	38	3	27	2	793	240	105	2
4th January ..	..	..	..	..	..	..	..	..	..	..	..	..	26	20	31	7	24	..	701	249	139	26
5th January ..	..	..	..	..	..	..	..	..	..	..	..	..	43	43	44	11	30	5	799	203	70	..
6th January ..	..	..	..	..	..	..	..	..	..	..	..	..	19	22	23	7	33	5	696	233	51	8
7th January ..	..	..	..	..	..	..	..	..	..	..	..	..	85	19	51	10	17	1	851	249	29	11
8th January ..	..	..	..	..	..	..	..	..	..	..	..	..	70	28	39	39	37	11	1,133	472	155	129
9th January ..	..	..	..	..	..	..	..	..	..	..	..	..	71	26	110	42	43	40	1,012	423	77	18
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	367	170	336	119	211	64	5,985	2,069	626	194
Total—Day and night ..	..		..		..		..		..		..		537		455		275		8,054		820	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		590·70 tons		113·75 tons		27·50 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	.. ..
Average weight per day of 24 hours	.. ..	.. ..
Weight per foot width of road	.. ..	.. ..

Non-motor traffic:

		Tons.
Total weight in seven days	..	.. 731·95
Average weight per day of 24 hours	..	.. 104·56
Weight per foot width of road	..	.. 4·35

Total weight of all traffic in seven days—731·95 tons.

(1) Location of observation—Mile 0·1 (Danton Bazar).

(2) Index No. and name of road—No. 49. Danton-Gopiballavpur Road.

(3) Supervising officer—Babu G. P. Sen Gupta, Subdivisional Officer (District Board), Sadar.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—24′ 0″.

(6) Average weight in tons of all traffic in 24 hours—306·46 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
20th February ..	..	..	..	..	..	..	..	..	..	..	..	..	238	117	94	43	77	28	780	351	194	84
21st February ..	..	..	..	..	..	..	..	..	..	..	..	..	178	94	88	86	62	20	816	362	222	40
22nd February ..	..	..	..	..	..	..	..	..	..	..	..	..	142	67	100	56	76	24	746	143	168	42
23rd February ..	..	..	..	..	..	..	..	..	..	..	..	..	240	37	274	55	46	15	958	424	226	121
24th February ..	..	..	..	..	..	..	..	..	..	..	..	..	61	59	38	33	30	13	359	220	158	94
25th February ..	..	..	..	..	..	..	..	..	..	..	..	..	134	74	185	106	37	23	751	306	168	57
26th February ..	..	..	..	..	..	..	..	..	..	..	..	..	129	40	115	20	54	5	627	226	174	46
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	1,122	488	894	399	382	128	5,037	2,032	1,310	484
Total—Day and night ..	..		..		..		..		..		..		1,610		1,293		510		7,069		1,794	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		1,771·00 tons		323·25 tons		51·00 tons					

Motor traffic:

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

Non-motor traffic:

	Tons.
Total weight in seven days	2,145·25
Average weight per day of 24 hours	306·46
Weight per foot width of road	12·77

Total weight of all traffic in seven days—2,145·25 tons.

(1) Location of observation—Mile 2·5 (Badalpur).

(2) Index No. and name of road—No. 66. Bangachok-Duria Road.

(3) Supervising officer—Babu P. C. Bose.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0″.

(6) Average weight in tons of all traffic in 24 hours—117·20 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
28th June ..	..	..	..	..	..	..	..	..	..	..	..	..	39	19	28	10	..	..	85	25	37	10
29th June ..	..	..	..	..	..	..	..	..	..	..	..	..	40	20	33	8	..	..	155	66	88	10
30th June ..	..	..	..	..	..	..	..	..	..	..	..	..	43	21	11	7	..	..	164	38	101	14
1st July ..	..	..	..	..	..	..	..	..	..	..	..	..	33	63	16	20	..	..	126	44	86	15
2nd July ..	..	..	..	..	..	..	..	..	..	..	..	..	88	73	18	10	..	..	748	246	134	62
3rd July ..	..	..	..	..	..	..	..	..	..	..	..	..	76	54	26	35	..	..	119	93	36	24
4th July ..	..	..	..	..	..	..	..	..	..	..	..	..	59	56	32	18	..	..	96	99	114	63
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	378	306	164	108	..	..	1,493	611	596	198
Total—Day and night ..	..		..		..		..		..		..		684		272		..		2,104		794	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		752·40 tons		68·00 ton		..					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	..
Average weight per day of 24 hours	.. ..	..
Weight per foot width of road	.. ..	..

Non-motor traffic:

		Tons.
Total weight in seven days	..	.. 820·40
Average weight per day of 24 hours	..	.. 117·20
Weight per foot width of road	.	.. 7·32

Total weight of all traffic in seven days—820·40 tons.

(1) Location of observation—Mile 2·5 (Badalpur).

(2) Index No. and name of road—No. 66. Bangachak-Duria Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-Overseer, Balichak.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0.″

(6) Average weight in tons of all traffic in 24 hours—423·30 tons.

Date.	Motor traffic.										Non-motor traffic.										Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.							
	Loaded.		Unloaded.										Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.																								
21st January ..	..	..	..	..	..	..	..	..	..	..	.	..	203	156	116	98	43	8	369	144	50	55		
22nd January ..	..	..	..	..	..	..	..	..	..	..	..	..	231	93	222	66	47	14	580	80	27	36		
23rd January ..	..	..	..	..	..	..	.	..	..	..	..	..	639	133	199	169	51	9	1,924	226	285	21		
24th January ..	..	..	..	..	..	..	..	..	..	..	..	..	285	91	169	56	48	7	486	155	90	41		
25th January ..	..	..	..	..	..	..	..	..	..	..	..	..	156	75	58	91	49	19	303	130	81	10		
26th January ..	..	..	..	..	..	..	..	..	..	..	..	..	108	61	80	56	16	6	249	49	55	33		
27th January ..	..	..	..	..	..	..	..	..	..	..	..	..	58	37	67	34	22	4	150	38	52	29		
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	1,680	646	911	570	276	67	4,061	822	640	225		
Total—Day and night ..	..		..		..		..		..		..		2,326		1,481		343		4,883		865			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	..		..		..		..		..		..		2,558·60 tons		370·25 tons		34·30 tons							

Motor traffic:

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

Non-motor traffic:

	Tons.
Total weight in seven days	2,963·15
Average weight per day of 24 hours	423·30
Weight per foot width of road	26·46

Total weight of all traffic in seven days—2,963·15 tons.

(1) Location of observation—Mile 2·5 (Badalpur).

(2) Index No. and name of road—No. 66, Bangachak-Duria Road.

(3) Supervising officer—Babu J. L. Chatterjee.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0.″

(6) Average weight in tons of all traffic in 24 hours—458·62 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
1st April	..	..	..	..	..	..	..	..	..	..	..	..	107	73	76	76	15	8	116	114	49	22
2nd April	..	..	..	..	..	..	..	..	..	..	..	..	132	137	131	85	34	9	214	119	109	18
3rd April	..	..	..	..	..	..	..	..	..	..	..	..	342	195	181	125	37	9	318	151	103	17
4th April	..	..	..	..	..	..	..	..	..	..	..	..	202	137	190	126	20	16	275	181	91	28
5th April	..	..	..	..	..	..	..	..	..	..	..	..	307	127	174	130	30	10	291	180	83	20
6th April	..	..	..	..	..	..	..	..	..	..	..	..	143	200	202	153	28	7	242	165	64	8
7th April	..	..	..	..	..	..	..	..	..	..	..	..	248	100	215	97	22	6	328	141	79	18
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	1,481	969	1,169	792	186	65	1,784	1,051	578	131
Total—Day and night ..	..		..		..		..		..		..		2,450		1,961		251		2,835		709	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		2,695·00 tons		490·25 tons		25·10 tons					

Motor traffic.					Tons.
Total weight in seven days	..	..	..	..	..
Average weight per day of 24 hours	..	..	..	..	..
Weight per foot width of road	..	..	..	..	..

Non-motor traffic.			Tons.
Total weight in seven days	..	..	3,210·35
Average weight per day of 24 hours	..	..	458·62
Weight per foot width of road	..	..	28·66

Total weight of all traffic in seven days—3,210·35 tons.

(1) Location of observation—Mile 0·25 (Debra).

(2) Index No. and name of road—No. 21. (Sadar Local Board) Debra-Mars Road.

(3) Supervising officer—Babu P. C. Bose, Sub-Overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—10′ 0″.

(6) Average weight in tons of all traffic in 24 —hours—303·40 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
20th June	..	..	..	..	..	..	..	..	..	..	..	..	88	87	47	60	20	7	572	112	96	53
21st June	..	..	..	..	..	..	..	..	..	..	.	..	128	118	86	75	38	11	773	100	123	60
22nd June	..	..	..	..	..	..	..	..	..	..	..	..	178	74	62	60	41	13	581	257	283	58
23rd June	..	..	..	..	..	..	..	..	..	..	..	..	125	58	75	52	70	28	1,265	176	145	43
24th June	..	..	..	..	..	..	..	..	..	..	..	..	114	33	101	84	33	5	655	124	139	43
25th June	..	..	..	..	..	..	..	..	..	..	..	..	178	112	112	65	52	6	633	146	192	61
26th June	..	..	..	..	..	..	..	..	..	..	..	..	208	148	115	100	36	4	457	218	138	70
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	1,019	630	598	496	290	74	4,936	1,133	1,116	388
Total—Day and night ..	..		..		..		..		..		..		1,649		1,094		364		6,069		1,504	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		1,813·90 tons		273·50 tons		36·40 tons					

Motor traffic.	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

Non-motor traffic.	Tons.
Total weight in seven days	2,123·80
Average weight per day of 24 hours	303·40
Weight per foot width of road	30·34

Total weight of all traffic in seven days—2,123·80 tons.

(1) Location of observation—Mile 0·25 (Debra).

(2) Index No. and name of road—No. 21. (Sadar Local Board Road) Debra Marotola Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-Overseer, Balichak.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—10′ 0″.

(6) Average weight in tons of all traffic in 24 hours —414·11 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
29th December ..	..	..	..	..	..	..	..	..	..	..	..	..	62	79	32	46	7	7	60	19	44	65
30th December ..	..	..	..	..	..	..	..	..	..	..	..	..	237	147	136	96	33	6	429	105	208	83
31st December ..	..	..	..	..	..	..	..	..	..	..	..	..	197	145	127	56	28	8	333	139	113	22
1937.																						
1st January ..	..	..	..	..	..	..	..	..	..	..	..	..	246	80	170	97	22	10	393	199	407	67
2nd January	..	..	..	..	..	..	..	..	..	..	..	..	240	166	224	104	20	11	355	99	161	69
3rd January	..	..	..	..	..	..	2	..	..	..	..	..	148	182	74	116	26	6	178	89	130	5
4th January	..	..	..	..	..	..	2	..	..	..	..	..	192	158	93	57	22	9	348	189	84	18
Total ..	..	..	..	..	..	..	4	..	.	..	..	..	1,322	966	858	572	158	57	2,096	839	1,147	329
Total—Day and night ..	..		..		..		4		..		..		2,288		1,430		215		2,935		1,476	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		3·00 tons		..		..		2,516·80 tons		357·50 tons		21·50 tons					

Motor traffic:

	Tons.
Total weight in seven days	3·00
Average weight per day of 24 hours	0·43
Weight per foot width of road	0·04

Non-motor traffic:

	Tons
Total weight in seven days	2,895·80
Total weight per day of 24 hours	413·68
Weight per foot width of road	41·36

Total weight of all traffic in seven days—2,898·80 tons.

(1) Location of observation—Mile 0·25 (Debra).

(2) Index No. and name of road—No. 21. (Sadar Local Board) Debra-Marotola Road.

(3) Supervising officer—Babu J. L. Chatterjee, Sub-Overseer, Balichak.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—10′ 0″.

(6) Average weight in tons of all traffic in 24 hours—524·82 tons.

Date.	Motor traffic										Non motor traffic											
	Lorries				Buses		Cars and taxis		Motor cycles		4 wheeled carts hackney carriages etc		Bullock carts				Other types of vehicles including rickshaws and cycles		Foot passengers		Cattle	
	Loaded		Unloaded										Loaded		Unloaded							
	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
1937.																						
18th March													1[illegible]1	1[illegible]6	1[illegible]0	118	20	12	322	194	55	30
19th March													311	21[illegible]	1[illegible]4	122	30	14	630	130	176	7
20th March													211	127	301	78	34	3	310	77	101	18
21st March													134	202	261	204	37	7	268	107	72	
22nd March													2[illegible]3	162	345	93	61	9	605	114	249	
23rd March													19[illegible]	120	346	86	28	13	421	213	129	99
24th March													2[illegible]6	165	173	170	32	33	398	254	53	19
Total													1 [illegible]65	1 147	1,760	869	242	91	2 954	1 089	835	173
Total—Day and night													2 712		2 629		333		4 043		1,008	
	At 3 5 tons		At 1 ton		At 2 5 tons		At 75 ton		At 20 ton		At 3 ton		At 1 1 tons 2 983 20 tons		At 25 ton 657 25 tons		At 1 ton 33 30 tons					

Motor traffic:

	Tons
Total weight in seven days	
Average weight per day of 24 hours	
Weight per foot width of road	

Non motor traffic:

	Tons
Total weight in seven days	3 673 75
Average weight per day of 24 hours	524 82
Weight per foot width of road	52 48

Total weight of all traffic in seven days—3,673 75 tons.

(1) Location of observation—Mile 0·1 (Sonakhali Bazar).

(2) Index No. and name of road—Nos. 50 and 55. (Ghatal Local Board) Sonakhali Gopiganj Road.

(3) Supervising officer—Babu N. Mookherjee, Sub-Overseer, Ghatal.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—12′ 0″.

(6) Average weight in tons of all traffic in 24 hours—85·27 tons.

Date.	Motor traffic.												Non-motor traffic.													
	Lorries.				Buses.		cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
26th December ..	..	..	..	..	4	..	3	..	..	..	..	..	23	3	15	7	60	19	259	142	25	4
27th December ..	..	..	..	..	2	..	1	1	..	..	..	..	39	..	26	19	81	34	1,732	240	59	19
28th December ..	..	..	..	..	2	..	1	3	..	..	..	..	49	..	39	16	76	32	585	245	125	17
29th December ..	..	..	..	..	3	1	9	1	..	..	..	..	61	15	30	29	91	45	589	283	109	19
30th December ..	..	..	..	..	5		1	1	..	..	..	..	27	9	21	9	65	38	419	170	90	18
31st December ..	..	..	..	..	2	..	..	..	..	..	..	..	53	4	25	20	85	31	1,894	257	100	14
1937.																						
1st January ..	..	..	..	..	3	..	1	1	..	..	..	.	50	10	16	13	91	13	623	177	66	31
Total ..	..	..	..	..	21	1	16	7	..	..	..	..	302	41	172	113	549	212	6,101	1,514	574	122
Total—Day and night ..	..		..		22		23		..		..		343		285		761		7,615		696	
	At 3·5 tons ..		At 1 ton ..		At 2·5 tons 55·00 tons		At ·75 ton 17·25 tons		At ·20 ton ..		At ·3 ton ..		At 1·1 tons 377·30 tons		At ·25 ton 71·25 tons		At ·1 ton 76·10 tons					

Motor traffic:

	Tons.
Total weight in seven days	72·25
Average weight per day of 24 hours	10·32
Weight per foot width of road	0·86

Non-motor traffic:

	Tons.
Total weight in seven days	524·65
Average weight per day of 24 hours	74·95
Weight per foot width of road	6·24

Total weight of all traffic in seven days—596·90 tons.

(1) Location of observation—Mile 0·1 (Sonakhali Bazar).

(2) Index No. and name of road—Nos. 50 and 55. (Ghatal Local Board) Sonakhali-Gopiganj Road.

(3) Supervising officer—Babu N. Mookherjee, Sub-overseer, Ghatal.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—12′ 0″.

(6) Average weight in tons of all traffic in 24 hours—66·65 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxies.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
9th January	..	..	..	..	5	1	1	..	..	..	..	..	17	11	12	7	57	40	438	202	40	13
10th January	..	..	..	..	5	2	2	..	..	..	..	..	23	8	4	8	73	36	1,794	240	95	27
11th January	..	..	..	..	7	..	1	..	..	..	..	..	20	3	15	11	75	32	701	221	34	14
12th January	..	..	..	..	9	4	4	2	..	..	..	..	7	12	5	..	47	34	674	274	17	21
13th January	..	..	..	..	4	2	2	..	..	..	..	..	27	6	9	2	52	34	748	299	24	7
14th January	..	..	..	..	8	2	4	2	..	..	..	..	23	1	14	1	70	28	2,416	1,500	74	10
15th January	..	..	..	..	6	5	2	3	..	..	..	..	19	10	8	12	67	21	964	298	24	9
Total ..	..	..	..	..	44	16	16	7	..	..	..	..	136	51	67	41	441	225	7,735	3,034	308	101
Total—Day and night ..	..		..		60		23		..		..		187		108		666		10,769		409	
	At 3·5 tons.		At 1 ton.		At 2·5 tons.		At ·75 ton.		At ·20 ton.		At ·3 ton.		At 1·1 tons.		At ·25 ton.		At ·1 ton.					
	..		..		150·00 tons.		17·25 tons.		..		..		205·70 tons.		27·00 tons.		66·60 tons.					

Motor traffic:

	Tons.
Total weight in seven days	167·25
Average weight per day of 24 hours	23·89
Weight per foot width of road	1·99

Non-motor traffic:

	Tons.
Total weight in seven days	299·30
Average weight per day of 24 hours	42·76
Weight per foot width of road	3·56

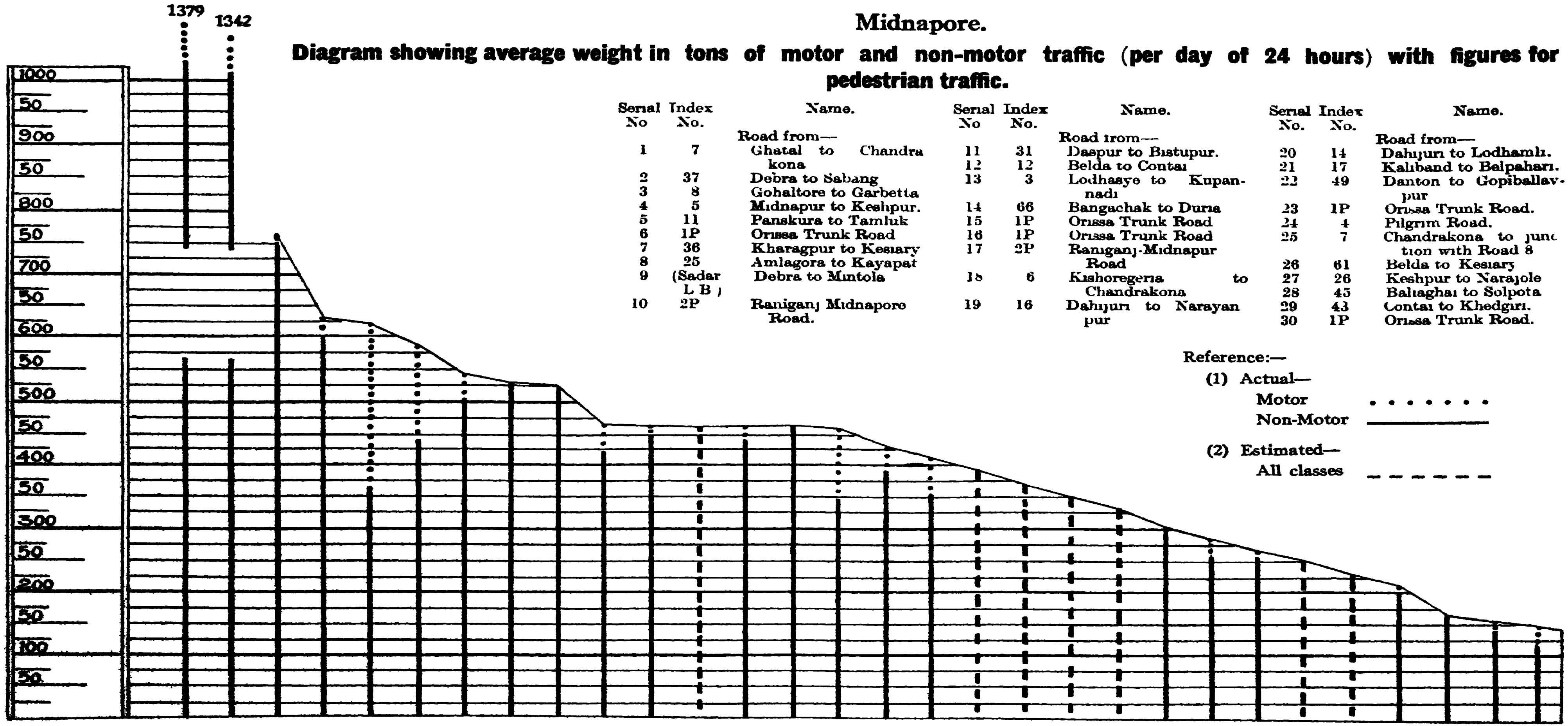
Total weight of all traffic in seven days—466·55 tons.

Appendix VIII.

Appendix VIII.

Midnapore.

Diagram showing average weight in tons of motor and non-motor traffic (per day of 24 hours) with figures for pedestrian traffic.



Serial No.	Index No.	Name.
		Road from—
1	7	Ghatal to Chandrakona
2	37	Debra to Sabang
3	8	Gohaltore to Garbetta
4	5	Midnapur to Keshpur.
5	11	Panskura to Tamluk
6	1P	Orissa Trunk Road
7	36	Kharagpur to Kesiary
8	25	Amlagora to Kayapat
9	(Sadar L B)	Debra to Mintola
10	2P	Raniganj Midnapore Road.
		Road from—
11	31	Daspur to Bistupur.
12	12	Belda to Contai
13	3	Lodhasye to Kupannadi
14	66	Bangachak to Duria
15	1P	Orissa Trunk Road
16	1P	Orissa Trunk Road
17	2P	Raniganj-Midnapur Road
18	6	Kishoregeria to Chandrakona
19	16	Dahijuri to Narayanpur
		Road from—
20	14	Dahijuri to Lodhamli.
21	17	Kaliband to Belpahari.
22	49	Danton to Gopiballavpur
23	1P	Orissa Trunk Road.
24	4	Pilgrim Road.
25	7	Chandrakona to junction with Road 8
26	61	Belda to Kesiary
27	26	Keshpur to Narajole
28	45	Baliaghai to Solpota
29	43	Contai to Khedgiri.
30	1P	Orissa Trunk Road.

Reference:—

(1) Actual—
- Motor · · · · · · ·
- Non-Motor ———————

(2) Estimated—
- All classes – – – – – –

Pedestrians ..	2,572	1,183	1,481	1,295	1,717	1,165	1,558	535	578	1,104	368	.	739	486	770
Total N. M. T. & M. T.	1,379	1,342	782	620	620	583	544	527	525	473	462	460	459	459	458
Motor traffic ..	64	46	10	19	229	140	41	..	..	55	12	.	12	.	109
Non-motor traffic ..	1,315	1,296	772	601	391	443	503	527	525	418	450	..	447	459	349
Serial No. ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Pedestrians ..	924	539	..	.		.	1,010	962	498	..	..	480	724	962	719
Total N. M. T. & M. T.	427	409	*390*	*370*	*350*	330	306	278	271	*250*	*230*	213	168	157	150
Motor traffic ..	37	52	..	.	.	.	..	20	12	..	..	5	..	15	28
Non-motor traffic ..	390	357		..	..	.	306	258	259	..	..	208	168	142	122
Serial No. ..	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Appendix VIII.

Midnapore.

Diagram showing average weight in tons of motor and non-motor traffic (per day of 24 hours) with figures for pedestrian traffic.

Serial No.	Index No.	Name.
		Road from—
31	38	Tamluk to Contai.
32	(Local Board).	Sonakhali-Gopiganj Road.
33	2	Bombay Road.
34	20	Binpur to Sijua.
35	3	Junction with Road 31 to Kupannadi.
36	40	Nandakumar to Rathgora Bazar.
37	62	Mundumaree to Pingla.
38	44	Contai to Ramnagore.
39	30	Burda to Samdeb.
40	59	Kharagpur to Malanchi.
41	33	Birballavpur to Harishpur.
42	28	Khirpai to Rangakhal.
43	22	Kalaberia to Kantapahari.
44	29	Sarsa to Ramjibanpur.

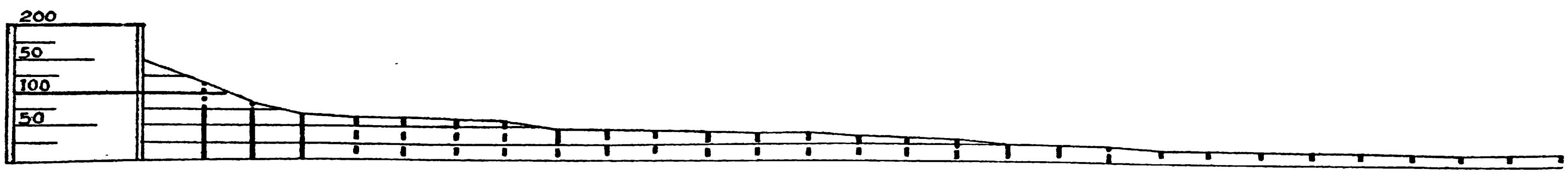
Serial No.	Index No.	Name.
		Road from—
45	1	Gope Road.
46	23	Pirakata to Gohaltore.
47	34	Godapeasal to Anandapur.
48	15	Lodhasuli to Mahapal.
49	41	Mahisadal to Chaitanyapur.
50	48	Nayagram to Palasmundi.
51	5	Keshpur to Tarajuli Khal.
52	46	Egra to Bajcool.
53	39	Tamluk to Bargoda.
54	21	Dahijuri to Dharampur.
55	47	Contai to Junput.
56	32	Baikunthapur to Rajnagar.
57	18	Belpahari to Tamajuri.
58	42	Balughata to Kukrahaty.

NOTE.—Roads carrying traffic of less than 10 tons per day of 24 hours have not been included in the graph.

Reference:—

(1) Actual—
Motor . . . .
Non-Motor ———

(2) Estimated—
All classes – – – – – –



	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Pedestrians ..	968	1,088	249	..	..	..	..	..	..	..	..	..	..	..
Total N.M. T. & M. T.	115	85	71	65	65	60	55	50	50	45	45	40	40	35
Motor traffic ..	37	10	..	..	..	..	..	..	..	..	..	..	..	..
Non-motor traffic ..	78	75	71	..	..	..	..	..	..	..	..	..	..	..
Serial No. ..	31	32	33	34	35	36	37	38	39	40	41	42	43	44

	45	46	47	48	49	50	51	52	53	54	55	56	57	58
Pedestrians ..	..	..	..	..	851	..	..	..	..	..	..	..	..	..
Total N.M. T. & M. T.	30	30	25	25	25	20	20	20	15	15	15	10	10	10
Motor traffic ..	..	..	..	..	7	..	..	..	..	..	..	..	..	..
Non-motor traffic ..	..	..	..	..	18	..	..	..	..	..	..	..	..	..
Serial No. ..	45	46	47	48	49	50	51	52	53	54	55	56	57	58

Appendix IX.

Midnapore.

Statement showing particulars of items included in the road system recommended for improvement.

Index No.	Classification.	Location. From—	Location. To—	Location. Route.	Purpose served.	Sub-sections. No.	Sub-sections. From—	Sub-sections. To—	Length in miles.	Rough cost in rupees. Specification "A".	Rough cost in rupees. Specification "B".
1	2	3	4	5	6		8	9	10	11	12
A	Provincial—Trunk	Harihar (Hooghly district boundary).	Dhumsai (Orissa boundary).	Following District Board road No. 5 to Midnapore, Government road No. 1P to Khargpur, District Board road No. 36 to Kesiari, new alignment for about 8 miles to Nayagram and thence by District Board road No. 48 to the Orissa boundary near Dhumsai.	The road will form the main artery running through the district from north to south and will be continued on the north through the Hooghly and Burdwan districts to meet the Grand Trunk road at Burdwan, on the south there is at present no actual connection with the road system in Orissa, but the provision of a short length of road will link it up with the existing metalled road running from Baripada to Amarda R. S.	1	Harihar ..	Kesurgeria ..	15·50	15,25 000	12,50,000
						2	Kesurgeria ..	Midnapore ..	21·00	8,00,000	4,25,000
						3	Midnapore ..	Kausalya ..	6·00	1,75,000	1,00,000
						4	Kausalya ..	Khajurabheri ..	12·00	4,00,000	2,00,000
						5	Khajurabheri ..	Kesiari ..	6·00	1,75,000	75,000
						6	Kesiari ..	Navagram ..	6·00	13,50,000	12.50,000
						7	Nayagram ..	Dhumsai ..	15·00	4,00,000	2,75,000
B	Inter-district—Main	Midnapore on item A above.	Jamdahara (Bankura district boundary).	Following District Board road No. 4 and Government road No. 2P to Kuturia, District Board road No. 22 to Abradihi, District Board road No. 23 to Goaltore and new alignment to Jamdahara.	This road will provide the main inter-district connection with the Bankura district and is intended to take the place of the present Government road No. 2P, which runs parallel to the railway.	1	Midnapore ..	Abradihi ..	14·00	5,00,000	2,75,000
						2	Abradihi ..	Goaltore ..	11·00	5.00,000	3,25,000
						3	Goaltore ..	Jamdahara ..	12·00	6,00,000	4,00,000
C	District—Main ..	Khajurabheri on item A above.	Dhenkia (Bankura district boundary).	Following new alignment to Lodhasuli, District Board road No. 14 to Jhargram, District Board roads Nos. 14 and 16 to Silda, District Board roads No. 17 and 18 and a new alignment to the Bankura district boundary near Dhenkia.	This road will serve an extensive strip of the district lying to the south of the Cossye river, will act as a feeder to the Bengal-Nagpur Railway and will connect up with the road system in the Singhbhum district of Bihar.	1	Khajurabheri ..	Lodhasuli ..	..	..	..
						2	Lodhasuli ..	Jhargram ..	..	..	..
						3	Jhargram ..	Binpur ..	..	..	..
						4	Binpur ..	Silda ..	..	..	..
						5	Silda ..	Bamni ..	..	..	..
						6	Bamni ..	Dhenkia ..	..	..	..
D	Ditto ..	Silda on item C above.	Mandaldiha (near Bankura district boundary).	Following District Board road No. 68	This road will continue in the Bankura district to Raipur and will form an extension of one of the main roads in Bankura serving to connect it with item C.	1	Silda ..	Mandaldiha ..	..	..	..
E	District—Secondary	Abradihi on item B above.	Kantapahari near Bankura district boundary.	Following District Board road No. 22	This road will serve an important area in the north-west of the district.	1	Abradihi ..	Kantapahari ..	..	..	..

F	District—Main (sub-sections 3 and 4 are provincial Trunk).	Goaltore on item B above.	Ghatal and on to Hooghly district boundary.	Following District Board road No. 7 up to Ghatal and new alignment from thence to district boundary.	The road will be the main east-west line of communication in the north of the district and will serve as a good feeder to the railway.	1	Goaltore ..	Chandrakona ..	..	..	..
						2	Chandrakona ..	Hematpur ..	..	..	..
						3	Hematpur ..	Ghatal ..	9·50	11,50,000	9,25,000
						4	Ghatal ..	Hooghly district boundary (Kagnan).	3·00	10,25,000	9,50,000
G	District—Secondary	Chandrakona Road Station on item F above.	Garhbeta ..	Following existing Government road No. 2P.	This short length of road is intended to connect the Garhbeta thana with the main road passing through Chandrakona Road Station.	1	Chandrakona Road Station.	Garhbeta ..	..	..	..
H	District—Main ..	Ghatal on item F above.	Khadal-Gobra (Digha) on south coast.	Following District Board road No. 31 to Daspur, District Board road No. 31 for about 2 miles, new alignment to Panskura, District Board road No. 11 to Tamluk, District Board road No. 38 to Contai, District Board road No. 44 to Ramnagar and District Board road No. 75 to the sea coast near Digha.	The road will run more or less from north to south through the entire length of the eastern portion of the district opening up a vast expanse of country at present most inaccessible.	1	Ghatal ..	Kalmijor ..	8·00	5,25,000	4,00,000
						2	Kalmijor ..	Panskura ..	12·00	6,75,000	5,00,000
						3	Panskura ..	Tamluk ..	..	..	..
						4	Tamluk ..	Basdebpur ..	..	..	..
						5	Basdebpur ..	Ghurbari .. }	18·00	13,75,000	10,25,000
						6	Ghurbari ..	Atmaramchak .. }			
						7	Atmaramchak ..	Contai ..	14·00	10,00,000	7,25,000
						8	Contai ..	Ramnagar .. }	20·00	12,25,000	7,75,000
						9	Ramnagar ..	Khadalgobra .. }			
I	Ditto ..	Kuturia on item B above.	Kalmijor on item H above.	Following Government road No. 2P to Godapiasal, District Board road No. 34 and new alignment to Keshpur, District Board road No. 26, new alignment for about one mile and District Board road No. 27 to meet item "H" above at Kalmijor.	The road forms an important cross road tapping a large area on the north of river Cossye and serving as feeder to the railway.	1	Kuturia ..	Keshpur ..	..	..	..
						2	Keshpur ..	Kalmijor ..	18·00	9,25,000	6,25,000
J	District—Secondary	Lodhasuli on item C above.	Kherikamathani on item A above.	Following District Board roads Nos. 15 and 49 with a short length of new alignment on the south of Subarnarekha.	The road is intended to serve the south-west corner of the district, the Subarnarekha which is crossed by the road will be left unbridged.	1	Lodhasuli ..	Tentulia ..	..	..	..
						2	Tentulia ..	Narda ..	..	..	..
						3	Narda ..	Kherikamathani ..	..	..	..
K	Ditto ..	Tetulia on item J above.	Gopiballavpur ..	Following District Board road No. 49 with a short length of new alignment.	The road forms a short branch to item J leading to the headquarters of the Gopiballabhpur thana.	1	Tentulia ..	Gopiballabhpur ..	..	..	..
L	District—Main ..	Kesiari on item A above.	Biramput on south coast.	Following District Board road No. 61 to Belda, District Board road No. 12 to Contai and District Board road No. 47 to the sea coast.	The road will form a main line of communication running across the south of the district and connecting the subdivisional headquarters at Contai with the Trunk road passing through Kesiari.	1	Kesiari ..	Contai Road ..	..	..	..
						2	Contai Road ..	Paharichak ..	..	..	..
						3	Paharichak ..	Egra ..	..	..	..
						4	Egra ..	Contai ..	..	..	..
						5	Contai ..	Biramput ..	..	..	..
M	Ditto ..	Debra ..	Paharichak on item L above.	Following District Board road No. 37 to Sabang, about 7 miles of new alignment and District Board road No. 46 to Patashpur and new alignment to meet L near Paharichak.	The road will form a main north-south line of communication running through the heart of the south-eastern portion of the district and tapping a large area at present ill supplied with road communication.	1	Debra ..	Gourangchak ..	..	..	..
						2	Gourangchak ..	Saridaspur ..	..	..	..
						3	Saridaspur ..	Paharichak ..	..	..	..
N	Ditto ..	Kausalya on item A above.	Bhamua ..	Following existing Government road No. 1P to Benapur and new alignment thence to Bhamua.	The road is intended to serve an extensive area lying to the south of the railway and to form a link in the road system serving to connect the south-eastern portion of the district with the headquarters at Midnapore.	1	Kausalya ..	Benapur ..	4·00	1,25,000	75,000
						2	Benapur ..	Gourangchak ..	12·00	5,00,000	3,25,000
						3	Gourangchak ..	Bhamua ..	10·00	5,00,000	3,25,000

Index No.	Classification.	Location. From—	Location. To—	Location. Route.	Purpose served.	Sub-sections. No.	Sub-sections. From—	Sub-sections. To—	Length in miles.	Rough cost in rupees. Specification A.	Rough cost in rupees. Specification B.
1	2	3	4	5	6	7	8	9	10	11	12
O	District—Main ..	Saridaspur on item M above.	Ghurbari on item H above.	Following District Board road No. 46 with a short intermediate length of new alignment.	The road forms a short link between items H and M serving the intermediate territory.	1	Saridaspur ..	Ghurbari ..	..	..	..
P	District—Secondary	Bargoda-Gudar ..	Sutahata ..	Following District Board road No. 39, new alignment for about 5 miles, District Board No. 40 to Mahisadal, District Board road No. 41 and new alignment to Sutahata.	The road runs across item H and taps area lying on both sides of the main road.	1	Bargoda-Gudar ..	Basdebpur ..	..	..	..
						2	Basdebpur ..	Lakshya ..	8·00	3,50,000	2,25,000
						3	Lakshya ..	Sutahata. ..	..	..	..
Q	Ditto ..	Lakshya on item P above.	Suklalpur on south bank of Hooghly.	Following an entirely new alignment	The road forms a short branch to item P, terminating on the south bank of the river Hooghly facing Hooghly point in the 24-Parganas.	1	Lakshya ..	Suklalpur ..	5·00	2,25,000	1,50,000
R	Ditto ..	Atmaramchak on item H above.	Alichak on west bank of Hooghly.	Following new alignment to west of Khajuri and thence by District Board road No. 43 to Alichak.	The road forms a branch to the main road item H and taps a fairly large area in the south-east of the district.	1	Atmaramchak ..	Khajuri ..	..	..	..
						2	Khajuri ..	Alichak ..	..	..	..
S	Ditto ..	Baincha on item L above.	Matiberna at Orissa boundary.	Following District Board road No. 45	The road is intended to serve the area lying to the south-west of the main road (item L) connecting with the latter on the east and by means of a short length of road in Orissa with the Bengal-Nagpur Railway at Jaleswar on the west.	1	Baincha ..	Mohanpur ..	..	..	..
						2	Mohanpur ..	Matiberna ..	..	..	..

Appendix X.

Midnapore.

Rough estimates for the roads selected to form the scheme for improved roads in the district.

NOTE.—Estimates for the following roads have not been included in this appendix as they have either not been prepared or else, although prepared, were received too late for check :—

Road No. C—Sub-sections 1 to 6.

Road No. D—Sub-section 1.

Road No. E—Sub-section 1.

Road No. F—Sub-sections 1 and 2.

Road No. G—Sub-section 1.

Road No. H—Sub-sections 3 and 4.

Road No. I—Sub-section 1.

Road No. J—Sub-sections 1 to 3.

Road No. K—Sub-section 1.

Road No. L—Sub-sections 1 to 5.

Road No. M—Sub-sections 1 to 3.

Road No. O—Sub-section 1.

Road No. P—Sub-sections 1 and 3.

Road No. R—Sub-sections 1 and 2.

Road No. S—Sub-sections 1 and 2.

ESTIMATE No. 1.

Road No. A—Sub-section 1—Kesurgeria to Harihar.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.								
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
				Above.	Below.						
	Ft.	Rs.	Ft.	Ft.	Ft.		Ft.	Ft.	Ft.	Rs.	Rs.
(22) 1	35	100	3·5	..	..	..	4	15	..	16·5	34·78
2	35	100	3·0	..	..	..	3	15	..	16·5	35·78
3	35	100	3·0	..	..	..	3	15	..	16·5	36·78
4	15	100	2·5	..	..	..	3	15	..	16·5	37·78
5	15	100	2·5	..	..	..	3	15	..	16·5	38·78
6	15	100	5·0	..	..	..	5	15	..	16·5	39·78
7	15	100	2·5	..	..	..	3	15	..	16·5	40·78
8	15	100	6·0	..	..	..	6	15	..	16·5	41·42
9	15	100	..	..	..	..	3	15	..	16·5	40·42
10	12	100	..	..	..	..	3	12	..	16·5	39·42
11	12	100	0·5	..	..	..	3	12	..	16·5	40·42
12	12	100	1·0	..	..	..	3	12	..	16·5	41·42
13	15	100	1·0	..	..	..	3	15	..	16·5	42·42
14	12	100	1·6	..	..	..	3	12	..	16·5	43·42
15	12	100	2·0	..	..	..	3	12	..	16·5	44·42
(36·5) 15·5	15	100	..	..	..	..	3	..	..	16·5	45·42
Total 15·5	285	1,600	34·1	..	..	..	54	210	..	264	643·24
Average	18	100	2·2	..	..	..	3·48	14	..	16·5	41·5
Say	..	..	..	..	..	..	4	..	..	18	42

Prevailing average rate for—

Item			Rs. a.	Item			Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3"	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6"	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Midnapore—Estimate No. 1—*contd.*

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
(22) 1	4	2—4' 0" arched m. culvert	No	No	9	3—3' dia. R. C. pipe culvert.
		2—14' 0" } B. plate bridge .. 2—18' 0" } 64' 0"	"	"	70	Bridge.
		1—2' 0" arched m. culvert	"	"	3	1—3' dia. R. C. pipe culvert.
		1—4' 0 do. ..	"	"	3	1 ditto.
		1—3' 0" do. ..	"	"	3	1 ditto.
		1—2' 0" do. ..	"	"	3	1 ditto.
		1—3' 0" do. ..	"	"	3	1 ditto.
2	3	1—3' 0" do. ..	"	"	3	1 ditto.
		1—350' 0" causeway } 1—500' 0" breach .. }	..	..	250	Bridge (excluded from total).
		2—10' 0" arched m. culvert	No	No	20	ditto.
		3—10' 0" do. ..	"	"	30	ditto.
3	3	3—5' 0" do. ..	"	"	15	ditto.
		1—8' 0" do. ..	"	"	9	3—3' dia. R. C. pipe culvert.
		Breach—120' 0" gap ..	..	..	120	Bridge (excluded from total).
4	3	Nil.				
5	3	1—1' 6" pipe culvert ..	No	No	3	1—3' dia. R. C. pipe culvert.
		Breach—40' 0" gap ..	..	..	15	Bridge.
6	5	Causeway—215' 0" ..	..	..	60	ditto.
		Breach—150' 0" gap ..	..	..	60	ditto.
		Ditto—100' 0" do. ..	..	..	40	ditto.
		1—4' 0" arched m. culvert	No	No	4	1—4' dia. R. C. pipe culvert.
7	3	Breach—75' 0" gap ..	..	..	25	Bridge.
		Seleye river unbridged ..	..	..	320	ditto (excluded from total).
8	6	Mansatola river unbridged	..	..	500	ditto (ditto). total).
9	3	Ketia river unbridged ..	..	..	560	ditto (ditto).
		1—20' nullah unbridged	..	..	20	Bridge.
10	3	1—1' 0" pipe culvert ..	No	No	3	1—3' dia. R. C. pipe culvert.
11	3	1—4' 0" C. I. pipe culvert	"	"	3	1 ditto.
		1—4' 0" do. ..	"	"	3	1 ditto.
		1—4' 0" do. ..	"	"	3	1 ditto.
12	3	2—4' 0" pipe culvert ..	"	"	9	3 ditto.
		1—1' 0" do. ..	"	"	3	1 ditto.
		1—4' 0" do. ..	"	"	3	1 ditto.
		1—1' 0" do. ..	"	"	3	1 ditto.
13	3	Nil.				
14	3	1—40' 0" Sundar khal unbridged.	..	..	40	Bridge.
Carried over	194·6		..		468	
				Bridges of over 100 ft.	1,750	

Midnapore—Estimate No. 1—*contd.*

Mileage.		Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1		2	3	4	5	6	7
				Bridges of over 100 ft.		1,750	
Brought forward 194-6″			..			468	
		Ft.					
15		3	1—4′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
			1—4′ 0″ do. ..	„	„	3	1 ditto.
			1—4′ 0″ do. ..	„	„	3	1 ditto.
			1—4′ 0″ do. ..	„	„	3	1 ditto.
(36·5)	15·5	3	Tarajuli river unbridged	„	„	100	Bridge.
Total	15·5	210′ 6″ r.ft. or 13·58 r.ft. per mile				580	or 37·42 r.ft. per mile.
		Bridges of over 100 ft. in length				1,750	
		Allowance of 40·9 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.					
		Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 15·5 × (40·9 − 37·42) = 54 r.ft.					
		∴ R. C. pipe culverts = ¼ × 54′ = 13·5, say				13	
		Minor bridges up to 30 ft. = ¾ × 54′ = 40·5, say				41	
				Total	..	2,384	r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft.		1,380
(*i*) Seleya river ..	315′	
(*ii*) Mansatala river	500′	
(*iii*) Ketia river	565′	
	1,380′	
Constructing major bridges of length up to 300 ft.	..	370
Constructing minor bridges of length above 30 ft.	..	370
Constructing minor bridges of length up to 30 ft.	..	166
Constructing reinforced concrete pipe culverts	..	98
Total	..	2,384 r. ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.		Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1		2	3	4	5	6	7
		Ft.			Rs.		
(22)	1	4	2—4′ 0″ arched m. culvert	No	320	..	
			2—14′ 0″, 2—18′ 0″ = 64′ 0″ B. plate bridge.	„	2,560	..	
			1—2′ 0″ arched m. culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
			1—4′ 0″ do. ..	„	„	3	1 ditto.
			1—3′ 0″ do. ..	„	„	3	1 ditto.
			1—2′ 0″ do. ..	„	„	3	1 ditto.
			1—3′ 0″ do. ..	„	„	3	1 ditto.
	2	3	1—3′ 0″ do. ..	„	120	..	
			1—350′ 0″ causeway; 1—500′ 0″ Breach ..	..	..	250	Bridge (excluded from total).
			2—10′ 0″ arched m. culvert	No	800	..	
			3—10′ 0″ do. ..	„	1,200	..	
	3	3	3—5′ 0″ do. ..	„	No	15	Bridge.
			1—8′ 0″ do. ..	„	320	..	
			Breach—120′ 0″ gap ..	..	..	120	Bridge (excluded from total).
	4	3	Nil.				
	5	3	1—1′ 6″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
			Breach—40′ 0″ gap ..	..	..	15	Bridge.
	6	5	Causeway—215′ 0″ ..	..	..	60	ditto.
			Breach—150′ 0″ gap ..	..	..	60	ditto.
			Breach—100′ 0″ gap ..	..	..	40	ditto.
			1—4′ 0″ arched m. culvert	No	No	4	1—4′ dia. R. C. pipe culvert.
Carried over	..	167·6				212	
			Bridges of over 100 ft.			370	

Midnapore—Estimate No. 1—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R. ft.	Type.
1	2	3	4	5	6	7
		Bridges of over 100 ft.			370	
Brought forward 167·6		..			212	
	Ft.					
7	3	Breach 75′ 0″ gap ..	..	..	25	Bridge.
		Seleye river unbridged ..	..	..	320	Bridge (excluded from total).
8	6	Mansatola river unbridged	..	..	500	Bridge (excluded from total).
9	3	Ketia river unbridged ..	..	..	560	ditto (ditto).
		1—20′ 0″ Nullah unbridged	..	..	20	Bridge.
10	3	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
11	3	1—4′ 0″ C. I. pipe culvert	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
12	3	2—4′ 0″ pipe culvert ..	,,	,,	9	3 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
13	3	Nil.				
14	3	1—40′ 0″ Sundar khal unbridged.	..	..	40	Bridge.
15	3	1—4′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
(36·5) 15·5	3	Tarajuli river unbridged	..	..	100	Bridge.
Total 15·5	..	210′ 6″ r.ft. or 13·58 r.ft. per mile		5,320 or	439 133	
					572	or 36·9 r.ft. per mile.
		Bridges of over 100 ft. in length ..		..	1,750	

Allowance of 40·4 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30ft. = 15·5 × (40·4 − 36·9) = 54 r.ft.

∴ R. C. pipe culverts = ¼ × 54 = 13·5 r.ft., say ... 13

Minor bridges up to 30 ft. = ¾ × 54 = 40·5 r.ft., say ... 41

Total ... 2,376 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft. ..		1,380
(*i*) Seleye river ..	315′	
(*ii*) Mansatola river ..	500′	
(*iii*) Ketia river ..	565′	
	1,380′	
Constructing major bridges of length up to 300 ft. ..		370
Constructing minor bridges of length above 30 ft. ..		300
Constructing minor bridges of length up to 30 ft. ..		116
Constructing reinforced concrete pipe culverts ..		77
Reconditioning existing bridges and culverts ..		133
Total ..		2,376 r.ft.

Midnapore—Estimate No. 1—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A.		Specification B.	
	Details.	Cost.	Details.	Cost.
		Rs.		Rs.
Land ..	5,280′×112′ = 591,360 S.ft. *Deduct* existing 5,280′×18′ = 95,040 496,320 =34·47 bighas at Rs. 100 per bigha.	3,447	5,280′×112′ = 591,360 S.ft. *Deduct* existing 5,280′×18′ = 95,040 496,320 =34·47 bighas at Rs. 100 per bigha.	3,447
Earthwork ..	5,280′×161′ = 850,080 C.ft. *Deduct* existing 5,280′×14′×2·2′ = 162,624 687,456 At Rs. 4 per 1,000 c.ft. ..	2,750	5,280′×150′ = 792,000 C.ft. *Deduct* existing 5,280′×4′×2·2′ = 162,624 687,456 At Rs. 4 per 1,000 c.ft. ..	2,518
Turfing ..	5,280′×18′=95,040 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	333	5,280′×18′=95,040 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	333
Edging ..	5,280′×2=10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..	581	5,280′×2=10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..	581
Soling ..	5,280′×10′=52,800 s.ft. At Rs. 11 per 100 s.ft. ..	5,808	5,280′×8′=42,240 s.ft. At Rs. 6 per 100 s.ft. ..	2,534
Jhama metal ..	5,280′×10′×4″=17,600 c.ft. At Rs. 18 per 100 c.ft. ..	3,168	5,280′×8′×8″=28,160 c.ft. At Rs. 18 per 100 c.ft. ..	5,069
Stone metal ..	5,280′×10′×3½″=15,400 c.ft. At Rs. 42 per 100 c.ft. ..	6,468	....	..
Wearing course	5,280′×10′=52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		28,669		14,722
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	2,866		1,472
	Total ..	31,535		16,194
	Say ..	31,500		16,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A.			Specification B.		
	Quantity.	Rate.	Cost.	Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	15·5 miles.	31,500 per mile.	4,88,250	15·5 miles.	16,500 per mile.	2,55,750
Constructing major bridges of length above 300 ft. (*i*) Seleye river .. 320′ (*ii*) Mansatala river .. 500′ (*iii*) Ketia river .. 560′ 1,380′	1,380 r.ft.	490 per r.ft.	6,76,200	1,380 r.ft.	490 per r.ft.	6,76,200
Constructing major bridges of length from 110 ft. to 300 ft.	370 r.ft.	340 per r.ft.	1,25,800	370 r.ft.	340 per r.ft.	1,25,800
Constructing approaches to above ..	6 sets.	5,500 each.	33,000	6 sets.	5,500 each.	33,000
	4 sets.	2,500 each.	10,000	4 sets.	2,500 each.	10,000
Constructing minor bridges of length above 30 ft.	370 r.ft.	260 per r.ft.	96,200	300 r.ft.	260 per r.ft.	78,000
Constructing minor bridges of length up to 30 ft.	166 r.ft.	330 per r.ft.	54,780	116 r.ft.	330 per r.ft.	38,280
Constructing reinforced concrete pipe culverts.	98 r.ft.	300 per r.ft.	29,400	77 r.ft.	300 per r.ft.	23,100
Reconditioning existing bridges and culverts.	..	..	..	133 r.ft.	40 per r.ft.	5,320
Total ..			15,13,630			12,45,450
Say ..			15·25 lakhs.			12·5 lakhs.

ESTIMATE No. 2.

Road No. A—Sub-section 2—Midnapore to Kesurgeria.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
				Above.	Below.						
	Ft.	Rs.	Ft.				Ft.	Ft.		Rs.	Rs.
1	30	60	2·5	..	..	..	3·0	24	..	16·5	21·30
2	30	60	2·5	..	..	..	3·0	24	..	16·5	22·54
3	30	60	2·5	..	..	..	3·0	24	..	16·5	23·54
4	40	60	4·0	..	..	..	4·0	24, 30, 26	..	16·5	24·54
5	30	60	2·0	..	..	..	3·0	24	..	16·5	25·54
6	40	60	2·5	..	..	..	3·0	24, 30, 26	..	16·5	26·54
7	55	60	2·0	..	..	..	3·0	24, 30, 26	..	16·5	27·54
8	60	60	2·0	..	..	..	3·0	24, 30,26	..	16·5	28·54
9	30	60	3·0	..	..	..	3·0	24	..	16·5	29·54
10	75	60	6·0	..	..	..	6·0	24	..	16·5	30·54
11	60	60	4·0	..	..	..	4·0	24	..	16·5	31·54
12	60	60	3·0	..	..	..	3·0	24	..	16·5	32·54
13	60	60	3·0	..	..	..	3·0	24	..	16·5	32·18
14	50	60	3·0	..	..	..	3·0	24	..	16·5	31·18
15	40	60	4·0	..	..	..	4·0	24	..	16·5	32·18
16	45	60	4·0	..	..	..	4·0	20	..	16·5	33·18
17	40	60	7·0	..	..	..	7·0	24	..	16·5	34·18
18	40	60	4·0	..	..	..	4·0	24	..	16·5	35·18
19	40	60	3·5	..	..	..	4·0	24	..	16·5	35·78
20	40	60	3·5	..	..	..	4·0	24	..	16·5	34·78
21	55	60	3·5	..	..	..	4·0	24	..	16·5	33·78
Total 21	950	1,260	71·5	..	..	..	78·0	500, 508	..	346·5	626·66
Average	45	60	3·4	..	..	..	3·71	24, 24	..	16·5	29·84
Say	..	..	..		..	..	4	..	..	18	32

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3″ ..	100 s.ft.	6	0
Turfing	1,000 s.ft.	3	8	Double brick soling 6″ ..	100 s.ft.	11	0
Brick-on-end edging	100 r.ft.	5	8				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3·0	Nil ..	..	..	..	..
2	3·0	1—4′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 6″ do. ..	,,	,,	3	1 ditto.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
3	3·0	1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
4	4·0	1—5′ 0″ trough plate bridge.	,,	,,	6	2 ditto.
		2—20′ 0″ arched masonry culvert.	,,	,,	40	Bridge.
5	3·0	1—1′ 0″ pipe culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
6	3·0	1—2′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
7	3·0	1—4′ 0″ trough plate bridge.	,,	,,	3	1 ditto.
8	3·0	1—3′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
9	3·0	1—4′ 0″ do. ..	,,	,,	3	1 ditto.
		1—4′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—4′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
		1—4′ 0″ do. ..	,,	,,	3	1 ditto.
Carried over	..	89·6″			91	

Midnapore—Estimate No. 2—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..	89·6					
10	6·0	5—22′ 6″ trough plate bridge over Parang river.	No	No	120	Bridge (excluded from total).
		3—19′ 6″ arched masonry culvert.	"	"	60	ditto.
		Causeway 350′ ..	..	..	60	ditto.
		2—5′ 0″ trough plate bridge.	No	No	15	ditto.
		Causeway 395′ ..	..	..	70	ditto.
11	4·0	1—1′ 0″ pipe culvert ..	No	No.	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 0″ do. ..	"	"	3	1 ditto.
		1—1′ 9″ do. ..	"	"	3	1 ditto.
12	3·0	1—1′ 0″ pipe culvert ..	No	No	3	1 ditto.
13	3·0	Nil.				
14	3·0	Nil.				
15	4·0	2—4′ 0″ arched masonry culvert.	No	No	9	3—3′ dia. R. C. pipe culvert.
16	4·0	1—3′ 0″ do. ..	"	"	3	1 ditto.
		Causeway 150′ ..	..	..	40	Bridge.
		1—13′ 0″ B. plate bridge	No	No	15	ditto.
		Causeway 210′ ..	..	..	60	ditto.
17	7·0	1—4′ 0″ arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—11′ 6″ B. plate bridge	"	"	15	Bridge.
		3—18′ 0″ do. ..	"	"	60	ditto.
		120′ gap unbridged (Temohini river).	..	..	300	Bridge (excluded from total).
		1—8′ 0″ arched masonry culvert.	No	No	8	2—4′ dia. R. C. pipe culvert.
		1—8′ 0″ do. ..	"	"	8	2 ditto.
		Causeway 150′ ..	..	..	40	Bridge.
		4—11′ 0″ } B. plate bridge. 1—15′ 0″ }	No	No	60	ditto.
		Causeway 202′ ..	..	..	60	ditto.
		2—6′ 0″ arched masonry culvert.	No	No	15	ditto.
		1—8′ 0″ do. ..	"	"	8	2—4′ dia. R. C. pipe culvert.
18	4·0	1—1′ 6″ do. ..	"	"	3	1—3′ ditto.
		2—4′ 0″ do. ..	"	"	9	3 ditto.
19	4·0	1—3′ 0″ do. ..	"	"	3	1 ditto.
20	4·0	Nil.				
21	4·0	1—3′ 0″ arched masonry culvert.	"	"	3	1—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	"	"	3	1 ditto.
		1—1′ 6″ pipe culvert ..	"	"	3	1 ditto.
Total 21		371′ 3″ r.ft. or 17·68 r.ft. per mile			737	or 35 r. ft. per mile.
		Bridges of over 100 ft. in length			420	

Allowance of 38 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 21 × (38—35) = 63 r.ft.

∴ R. C. pipe culverts = ¼ × 63′ = 15·7, say 16

Minor bridges up to 30 ft. = ¾ × 63′ = 47·1, say 47

Total .. 1,220 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft. 420

(*i*) Parang river .. .. 120′

(*ii*) Temohini river .. .. 300′

420′

Constructing minor bridges of length above 30 ft. 550

Constructing minor bridges of length up to 30 ft. 107

Constructing reinforced concrete pipe culverts 143

Total .. 1,220 r.ft.

Midnapore—Estimate No. 2—contd.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3·0	Nil				
2	3·0	1—4′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0′ do. ..	,,	160	..	
		1—2′ 0″ do. ..	No	No	3	1 ditto.
3	3·0	1—4′ 0″ do. ..	..	160	..	
		1—4′ 0″ do. ..	..	160	..	
4	4·0	1—5′ 0″ trough plate bridge.	No	No	6	2 ditto.
		2—20′ 0″ arched masonry culvert.	,,	1,600	..	
5	3·0	1—1′ 0″ pipe culvert ..	,,	No	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
6	3·0	1—2′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
7	3·0	1—4′ 0″ trough plate bridge.	,,	,,	3	1 ditto.
8	3·0	1—3′ 0″ arched masonry culvert.	,,	120	..	
9	3·0	1—4′ 0″ do. ..	,,	160	..	
		1—4′ 0″ pipe culvert ..	,,	No	3	1 ditto.
		1—4′ 0″ arched masonry culvert.	,,	160	..	
		1—4′ 0″ do. ..	,,	160	..	
10	6·0	5—22′ 6″ trough plate bridge over Parang river.	,,	4,520	..	(Excluded from total.)
		3—19′ 6″ arched masonry culvert.	,,	2,360	..	
		Causeway 350′ ..	..	..	60	Bridge.
		2—5′ 0″ trough plate bridge.	No	400	..	
		Causeway 395′ ..	..	..	70	ditto.
11	4·0	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 0′ do. ..	,,	,,	3	1 ditto.
		1—1′ 9″ do. ..	,,	,,	3	1 ditto.
12	3·0	1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
13	3·0	Nil.				
14	3·0	Nil.				
15	4·0	2—4′ 0″ arched masonry culvert.	,,	320	..	
16	4·0	1—3′ 0″ do. ..	,,	120	..	
		Causeway 150′ ..	..	..	40	Bridge.
		1—13′ 0″ B. plate bridge	No	No	15	ditto.
		Causeway 210′ ..	..	..	60	ditto.
17	7·0	1—4′ 0″ arched masonry culvert.	No	160	..	
		1—11′ 6″ B. plate bridge	,,	No	15	ditto.
		3—18′ 0″ do. ..	,,	2,160	..	
		120′ gap unbridged (Temohini river).	..	..	300	Bridge (excluded from total).
		1—8′ 0″ arched masonry culvert.	No	320	..	
		1—8′ 0″ do. ..	,,	320	..	
		Causeway 150′ ..	..	..	40	Bridge.
		4—11′ 0″ } B. plate bridge. 1—15′ 0″ }	No	2,360	..	
		Causeway 202′ ..	..	..	60	ditto.
		2—8′ 0″ arched masonry culvert.	No	480	..	
		1—8′ 0″ do. ..	,,	320	..	
Carried over ..		351·3′		16,520	402	

Bridges of over 100 ft. 300

Midnapore—Estimate No. 2—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
		Bridges of over 100 ft. ..	..		300	
Brought forward		351·3		16,520	402	
18	4·0	1—1′ 6″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		2—4′ 0″ do. ..	..	320	..	
19	4·0	1—3′ 0″ do. ..	..	120	..	
20	4·0	Nil.	..	..	..	
21	4·0	1—3′ 0″ arched masonry culvert.	..	120	..	
		1—3′ 0″ do. ..	..	120	..	
		1—1′ 6″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
Total 21	..	371·3 r.ft.		17,200 or	408 430	
					838	or 39·9 r.ft. per mile.
		Bridges of over 100 ft. in length.		..	300	

Allowance of 42·48 r.ft per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 21 × (42·48 − 39·9) = 54 r.ft.

∴ R. C. pipe culverts = ¼ × 54′ = 13·5′, say 13

Minor bridges up to 30 ft. = ¾ × 54′ = 40·5′, say .. 41

Total .. 1,192 r.ft.

Abstract of the above.

Constructing major bridges of lengths up to 300 ft. (*i*) Tomohini river. ..	300
Constructing minor bridges of lengths above 30 ft. ..	330
Constructing minor bridges of lengths up to 30 ft.	71
Constructing reinforced concrete pipe culverts	61
Reconditioning existing bridges and culverts	430
Total ..	1,192 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.	S.ft.	Cost. Rs.	Specification B. Details.	S.ft.	Cost. Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing 5,280′ × 45′ =	237,600		*Deduct* existing 5,280′ × 45′ =	237,600	
		353,760			353,760	
	= 24·56 bighas at Rs. 60 per bigha		1,474	= 24·56 bighas, at Rs. 60 per bigha		1,474
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing 5,280′ × 24′ × 3·4′ =	430,848		*Deduct* existing 5,280′ × 24′ × 3·4′ —	430,848	
		419,232			361,152	
	At Rs. 4 per 1,000 c.ft. ..		1,677	At Rs. 4 per 1,000 c.ft. ..		1,445
Carried over ..			3,151			2,919

Midnapore—Estimate No. 2—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		3,151		2,919
Turfing ..	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft. ..	333	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1000 s.ft. ..	333
Edging ..	5, 280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..	581	5, 280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..	581
Soling ..	5,280′ × (10′—8′) = 10,560 s.ft. At Rs. 11 per 100 s.ft. ..	1,162	....	..
Jhama metal ..	5,280′ × 10′ × 3″ = 13,200 c.ft. *(1″ allowance is made for the existing) at Rs. 18 per 100 c.ft.	2,376	5,280′ × 8′ × 4″ = 14,080 c.ft. (a new layer of 4″ metalling is provided over the existing metal) at Rs. 18 per 100 c.ft.	2,534
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 32 per 100 c.ft. ..	4,928	....	..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		18,645		6,607
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	1,864		660
	Total ..	20,509		7,267
	Say ..	20,500		7,500

*This includes cost of screening, laying and consolidating.

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	21 miles	20,500 per mile.	4,30,500	21 miles	7,500 per mile.	1,57,500
Constructing major bridges of length from 110 ft. to 300 ft.—(*i*) Parang river—120′ and (*ii*) Tomohini river—300′.	420 r.ft.	320 per r.ft.	1,34,400	300 r.ft.	320 per r.ft.	96,000
Constructing approaches to above ..	4 sets	2,500 each.	10,000	2 sets	2,500 each.	5,000
Constructing minor bridges of length above 30 ft.	550 r.ft.	260 per r.ft.	1,43,000	330 r.ft.	260 per r.ft.	85,800
Constructing minor bridges of length up to 30 ft.	107 r.ft.	330 per r.ft.	35,310	71 r.ft.	330 per r.ft.	23,430
Constructing reinforced pipe culverts ..	143 r.ft.	300 per r.ft.	42,900	61 r.ft.	300 per r.ft.	18,300
Reconditioning existing bridges and culverts.	..	..	..	430 r.ft.	40 per r.ft.	17,200
Total	..		7,96,110			4,03,230
Say	..		8 lakhs.			4·25 lakhs.

ESTIMATE No. 3.

Road No. A—Sub-section 3—Midnapore to Kausalya.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	114	50	9	3	..	..	9	22	56	18	32
2	118	40	8	3	..	..	8	21	56	18	32
3	124	40	8	3	..	..	8	21	50	18	32
4	114	800	4	2	..	..	4	18	25	18	32
5	75	400	4	2	..	..	4	20	40	18	32
6	80	400	4	2	..	..	4	20	40	18	32
Total 6	625	1,730	37	..	..	..	37	122	267	108	192
Average	104·1	288·3	6·1	..	..	..	6·1	20·3	44·5	18	32
Say ..	104	290	6·1	..	..	..	7	20	44	18	32

Prevailing average rate for —

		Rs. a.			Rs. a.
Earthwork	.. 1,000 c.ft.	4 0	Single brick soling 3″	.. 100 r.ft.	6 0
Turfing	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 r.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3		4	5	6	7
	F.t.						
1	9		Nil ..	..	..	..	
2	8		Nil ..	..	..	..	
3	8		Nil ..	..	..	..	
4	4		Nil ..	..	..	..	
5	4	1—3′ 6″	arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
6	4	2—10′ 0″	stone bridge	,,	,,	20	Bridge.
		1—8′ 0″	do ..	,,	,,	15	Ditto.
		1—8′ 0″	do ..	,,	,,	15	Ditto.
Total 2 excluding mileages having no bridges and culverts.						54	or 27 r.ft. per mile.

Allowance of 30 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 6 \times (30-27) = 18$ r.ft.

∴ R. C. pipe culverts $= \frac{1}{4} \times 18' = 4\cdot5$ r.ft. say 4

Minor bridges up to 30 ft. $= \frac{3}{4} \times 18' = 13\cdot5$ r.ft. say 15

Total 73 r.ft.

Abstract of the above.

Constructing minor bridges of lengths up to 30 ft.	..	65
Constructing reinforced concrete pipe culverts	..	8
Total		73 r.ft.

Midnapore—Estimate No. 3—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
						R.ft.	Type.
1	2	3		4	5	6	7
	Ft.				Rs.		
1	9		Nil ..	..	..	..	
2	8		Nil ..	..	..	..	
3	8		Nil ..	..	..	..	
4	4		Nil ..	..	..	..	
5	4	1—3′ 6″	arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
6	4	2—10′ 0″	stone bridge	,,	800	..	
		1—8′ 0″	do ..	,,	320	..	
		1—8′ 0″	do ..	,,	320	..	
Total 2 excluding mileages having no bridges and culverts.	..			..	1,440 or	4 36	
						40	or 20 r.ft. per mile.

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 6 × (30—20) = 60′

∴R. C. pipe culverts = ¼ × 60′ =	15
Minor bridges up to 30 ft. = ¾ × 60′ =	45
Total ..	100 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	45
Constructing reinforced concrete pipe culverts	19
Reconditioning existing bridges and culverts	36
Total ..	100 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		Sft.	Rs.
Land ..	5,280′ × 146′ =	770,880		5,280′ × 146′ =	770,880	
	Deduct existing 5,280′ × 104′ =	549,120		*Deduct* existing 5,280′ × 104′ =	549,120	
		221,760			221,760 ,,	
	= 15·4 bighas at Rs. 290 per bigha		4,466	= 15·4 bighas at Rs. 290 per bigha		4,466
Carried over ..			4,466			4,466

Midnapore—Estimate No. 3—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward	..	4,466		4,466
Earthwork ..	C. ft. 5,280′ × 319′ = 1,684,320 *Deduct* existing 5,280′ × (20′+44′)/2 × 6·1′ = 1,030,656 653,664 At Rs. 4 per 1,000 Cft.	2,615	C. ft. 5,280′ × 302′ = 1,594,560 *Deduct* existing 5,280′ × (20+44′)/2 × 6·1 = 1,030,656 563,904 At Rs. 4 per 1,000 cft.	2,256
Turfing ..	5,280′ × 31·5′ = 166,320 s.ft. At Rs. 3-8 per 1,000 s.ft.	582	5,280′ × 31·5′ = 166,320 s.ft. At Rs. 3-8 per 1,000 s.ft.	582
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r. ft.	581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r. ft.	581
Soling	5,280′ × 2′ = 10,560 s.ft. At Rs. 11 per 100 s. ft.	1,161	....	..
Laterite metal	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 12 per 100 cft.	2,112	5,280′ 8′ × 8″ = 28,160 c.ft. At Rs. 12 per 100 c.ft.	3,379
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 32 per 100 cft.	4,928	....	..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each	240	40 nos. at Rs. 6 each	240
		22,559		11,504
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per per cent.	2,256		1,150
	Total ..	24,815		12,654
	Say ..	25,000		13,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road.	6 miles.	25,000 per mile.	1,50,000	6 miles.	13,000 per mile.	78,000
Constructing minor bridges of length up to 30 ft.	65 r.ft.	330 per r.ft.	21,450	45 r.ft.	330 per r.ft.	14,850
Constructing reinforced concrete pipe culverts.	8 r.ft.	300 per r.ft.	2,400	19 r.ft.	300 per r.ft.	5,700
Reconditioning existing bridges and culverts.	..	..	.	36 r.ft.	40 per r.ft.	1,440
Total			1,73,850			99,990
Say			1·75 lakhs.			1·0 lakh.

ESTIMATE No. 4.

Road No. A—Sub-sections 4—Kausalya to Khejurabheri.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for Jhama Metal.	Rate for Stone Metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	72	400	4	4	..	..	4	20	42, 45,40	18	31
2	60	300	5	4	..	..	5	20	40	18	32
3	56	40	5	4	..	..	5	20	36	18	34
4	58	15	2	No flood.			3	20	30	18	35
5	60	10	5	3	..	..	5	20	36	18	36
6	50	10	5	4	..	..	5	20	35	18	37
7	40	8	2	No flood.			3	18	30	18	38
8	45	10	4	3	..	..	4	20	30	18	39
9	50	25	3	1	..	..	4	18	36	18	40
10	45	30	2	1	..	..	3	16	30	18	41
11	40	40	4	3	..	..	4	18	32	18	42
12	50	50	5	3	..	..	5	16	30	18	43
Total 12 miles	626	938	46	..	..	..	50	226	407, 405	216	448
Average	52·1	78·1	3·8	..	..	..	4·2	18·8	33·9,33·7	18	37·3
Say	52	80	3·8	..	..	..	5	18	33, 33	18	40

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3" ..	100 r.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6" ..	100 r.ft.	11	0
Brick-on-end edging	100 r.ft.	5	8				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.*	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	4	1—2′ 0″ stone slabbed culvert	No	No	3	1—3′ dia. R.C. pipe culvert.
		1—9′ 0″ stone bridge ..	,,	,,	15	Bridge.
2	5	1—10′ 0″ do. ..	,,	,,	15	ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1—3′ dia. R.C. pipe culvert.
3	5	2—13′ 0″ stone bridge ..	,,	,,	30	Bridge.
4	3	1—8′ 0″ do. ..	,,	,,	15	ditto.
5	5	2—4′ 0″ C.I. pipe culvert ..	,,	,,	8	2—4′ dia. R.C. pipe culvert.
		1—4′ 0″ stone slabbed culvert	,,	,,	4	1 ditto.
6	5	Nil.				
7	3	2—6′ 3″ stone bridge ..	No	No	15	Bridge.
8	4	1—3′ 0″ arched m. culvert ..	,,	,,	3	1—3′ dia. R.C. pipe culvert,
		2—14′ 9″ buckled p. bridge	,,	,,	30	Bridge.
		1—6′ 0″ stone slabbed culvert	,,	,,	6	2—3′ dia. R.C. pipe culvert.
9	4	2—3′ 0″ do. ..	,,	,,	6	2 ditto.
10	3	1—1′ 6″ S.W. pipe culvert	,,	,,	3	1 ditto.
		2—14′ 0″ stone bridge ..	,,	,,	30	Bridge.
		Carried over ..			186	

Midnapore—Estimate No. 4—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
					186	
		Brought Forward	..			
	Ft.					
11	4	1—6′ 0″ arched m. culvert	No.	No.	6	2—3′ dia. R.C. pipe culvert.
		3—29′ 0″ T. P. bridge ..	,,	,,	100	Bridge.
		1—1′ 6″ stone slabbed culvert	,,	,,	3	1—3′ dia. R.C. pipe culvert.
12	5	Nil.				
Total 10 miles (excluding mileages having no bridges and culverts).					295	or 29·5 r.ft. per mile.

Allowance of 35 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for reinforced concrete pipe culverts and minor bridge of lengths up to 30 ft. = 12(35—29·5) = 66.

∴ Reinforced concrete pipe culverts = ¼ × 66 = 16·5 say .. 16

Minor bridges of lengths up to 30 ft. = ¾ × 66 = 49·5 say .. 50

Total .. 361 r.ft.

Abstract of the above.

Constructing minor bridges of lengths above 30 ft.	..	100
Constructing minor bridges up to 30 ft.	..	200
Constructing reinforced concrete pipe culverts	..	61
Total	..	361 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	4	1—2′ 0″ stone slabbed culvert	No	No	3	1—3′ dia. R.C. pipe culvert.
		1—9′ 0″ stone bridge ..	,,	360	..	
2	5	1—10′ 0″ do. ..	,,	400	..	
		1—1′ 6″ pipe culvert ..	,,	No	3	1—3′ dia. R.C. pipe culvert.
3	5	2—13′ 0″ stone bridge ..	,,	1,040	..	
4	3	1—8′ 0″ do. ..	,,	320	..	
5	5	2—4′ 0″ C. I. pipe culvert	,,	No	8	2—4′ dia. R.C. pipe culvert.
		1—4′ 0″ stone slabbed culvert	,,	,,	4	1—4′ dia. R.C. pipe culvert.
6	5	Nil.				
7	3	2—6′ 3″ stone bridge ..	,,	520	..	
8	4	1—3′ 0″ arched m. culvert	,,	No	3	1—3′ dia. R.C. pipe culvert.
		2—14′ 9″ buckled p. bridge	,,	1,200	..	
		1—6′ 0″ stone slabbed culvert	,,	240	..	
9	4	2—3′ 0″ do. ..	,,	240	..	
10	3	1—1′ 6″ S.W. pipe culvert ..	,,	No	3	1—3′ dia. R.C. pipe culvert.
		2—14′ 0″ stone bridge ..	,,	1,120	..	
11	4	1—6′ 0″ arched m. culvert	,,	240	..	
		3—29′ 0″ T. P. bridge ..	,,	No	100	Bridge.
		1—1′ 6″ stone slabbed culvert	,,	,,	3	1—3′ dia. R.C. pipe culvert.
12	5	Nil.				
Total 10 miles (excluding mileages having no bridges and culverts.)				5,680 or	127 142 269	or 26·9 r.ft. per mile.

Allowance of 35 r.ft. per mile excluding bridges of over 100 ft. in lengths is considered necessary. Extra provision for reinforced concrete pipe culverts and minor bridges of length up to 30 ft. = 12(35-26·9) = 97·2.

∴ Reinforced concrete pipe culverts = ¼ × 97·2 = 24·3 say 24

Minor bridges up to 30 ft. = ¾ × 97·2 = 72·9 say .. 75

Total .. 368 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	100
Constructing minor bridges up to 30 ft.	..	75
Constructing reinforced concrete pipe culverts	..	51
Reconditioning the existing bridges and culverts	..	142
Total	..	368 r.ft.

Midnapore—Estimate No. 4—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
	S.ft.	Rs.	S.ft.	Rs.
Land ..	5,280′ × 124′ = 654,720 *Deduct* existing 5,280′ × 52′ = 274,560 380,160 = 26·4 bighas at Rs. 80 per bigha	2,112	5,280′ × 124′ = 654,720 *Deduct* existing 5,280′ × 52′ = 274,560 380,160 = 26·4 bighas at Rs. 80 per bigha	2,112
	C.ft.		C.ft.	
Earthwork ..	5,280′ × 209′ = 1,103,520 *Deduct* existing $5{,}280' \times \frac{18'+33'}{2} \times 3\cdot8$ = 511,632 5,918,888 At Rs. 4 per 1,000 c.ft. ..	2,368	5,280′ × 196′ = 1,034,808 *Deduct* existing $5{,}280' \times \frac{18'+33'}{2} \times 3\cdot8'$ = 511,632 5,231,176 At Rs. 4 per 1,000 c.ft. ..	2,093
			S.ft.	
Turfing ..	5,280′ × 22·5′ = 118,800 s.ft At Rs. 3-8 per 1,000 s.ft. ..	416	5,280′ × 22·5′ = 118,800 At Rs. 3-8 per 1,000 s.ft. ..	416
			R.ft.	
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..	581	5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r.ft. ..	581
Soling ..	5,280′ × 2′ = 10,560 s.ft. At Rs. 11 per 100 s.ft. ..	1,161	.. ..	..
Laterite metal. ..	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 12 per 100 c.ft. ..	2,112	5,280′ × 8′ × 8″ = 28,160 At Rs. 12 per 100 c.ft. ..	3,379
Stone metal	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 40 per 100 c.ft. ..	6,160	..	..
Wearing course .	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..	5,874		
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		21,024		8,821
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	2,102		882
	Total	23,126		9,703
	Say	23,500		10,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	12 miles.	23,500 per mile.	2,82,000	12 miles.	10,000	1,20,000
Constructing minor bridges of length above 30 ft. ..	100 r.ft.	260 per r.ft.	26,000	100 r.ft.	260 per r.ft.	26,000
Constructing minor bridges of length up to 30 ft. ..	200 r.ft.	330 per r.ft.	66,000	75 r.ft.	330 per r.ft.	24,750
Constructing reinforced concrete pipe culverts ..	61 r.ft.	300 per r.ft.	18,300	51 r.ft.	300 per r.ft.	15,300
Reconditioning existing bridges and culverts ..	..	..	..	142 r.ft.	40 per r.ft.	5,680
Total ..			3,92,300			1,91,730
Say ..			**4·0 lakhs.**			**2·0 lakhs.**

ESTIMATE No. 5.

Road No. A—Sub-section 5—Khejurabheri to Kesiary.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	60	20	4	3	..	..	4	20	28	18	42
2	50	30	5	3	..	..	5	18	29	18	41
3	44	20	3	2	..	..	3	20	30	18	40
4	36	20	3	2	..	..	3	18	30	18	39
5	30	20	4	1·5	..	..	4	16	30	18	38
6	40	25	5	3	..	..	5	16	30	18	37
Total 6	260	135	24	..	..	..	24	108	177	108	237
Average	43	22·5	4	..	..	..	4	18	29	18	39·5
Say ..	..	30	..	..	..	..	..	..	..	..	40

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	1,000 c.ft.	4 0	Single brick soling 3″ ..	100 s.ft.	6 0
Turfing	1,000 s.ft.	3 8	Double brick soling 6″	100 s.ft.	11 0
Brick-on-end edging ..	100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	4	Nil				
2	5	2—3′ 0″ stone slabbed culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		3—10′ 0″ arched m. culvert.	,,	,,	30	Bridge.
3	3	2—3′ 0″ stone slabbed culvert.	..	,,	6	2—3′ dia. R. C. pipe culvert.
4	3	Nil				
5	4	1—1′ 3″ S. W. pipe culvert.	No	No	4	1—4′ ditto.
		1—8′ 0″ arched m. culvert.	,,	,,	15	Bridge.
6	5	Nil				
Total—3 miles excluding mileages having no bridges and culverts.					61	or 20·3 r.ft. per mile.

Allowance of 25 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 6 × (25′ − 20·3′) = 28·2 r.ft.

∴ R. C. pipe culverts = ¼ × 28·2 = 7·0, say	8	
Minor bridges up to 30 ft. = ¾ × 28·2 = 21·1, say ..	20	
Total ..	89	r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 s.ft. ..	65	
Constructing reinforced concrete pipe culverts	24	
Total ..	89	r.ft.

Midnapore—Estimate No. 5—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	4	Nil				
2	5	2—3′ 0″ stone slabbed culvert.	No	240		
		3—10′ 0″ arched m. culvert.	,,	1,200		
3	3	2—3′ 0″ stone slabbed culvert.	,,	240		
4	3	Nil				
5	4	1—3′ 0″ S. W. pipe culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—8′ 0″ arched M. culvert.	,,	320		
6	5	Nil				
Total—3 miles excluding mileages having no bridges and culverts.				2,000	4	
				or	50	
					54	or 18 r.ft. per mile.

Allowance of 25 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up 30 ft. $=6\times(25'-18')=42'$

∴ R. C. pipe culverts $=\frac{1}{4}\times 42=10\cdot 5$, say	12	
Minor bridges up to 30 ft. $=\frac{3}{4}\times 42=31\cdot 5$, say	30	
Total ..	96	r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	30	
Constructing reinforced concrete pipe culverts	16	
Reconditioning existing bridges and culverts	50	
Total ..	96	r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		S.ft.	Cost. Rs.	Specification B. Details.		S.ft.	Cost. Rs.
Land ..	5,280′ × 112′	=	591,360		5,280′ × 112′	=	591,360	
	Deduct existing 5,280′ × 43′	=	227,040		*Deduct* existing 5,280 × 43′	=	227,040	
			364,320				364,320	
	= 25·3 bighas at Rs. 30 per bigha ..			759	= 25·3 bighas at Rs. 30 per bigha			759
Carried over				759				759

Midnapore—Estimate No. 5—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		C.ft.	Rs.		C.ft.	Rs.
Brought forward		..	759			759
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing $5{,}280' \times \frac{18'+19'}{2} \times 4'$ =	496,320		*Deduct* existing $5{,}280' \times \frac{18'+29'}{2} \times 4'$	496,320	
		353,760			295,680	
	At Rs. 4 per 1,000 c.ft.		1,415	At Rs. 4 per 1,000 c.ft.	..	1,183
Turfing ..	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft.		333	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft.	..	333
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	..	581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	..	581
Soling ..	5,280′ × 2′ = 10,560 s.ft. At Rs. 11 per 100 s.ft.	..	1,161	....		..
Laterite metal	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 12 per 100 c.ft.	..	2,112	5,280′ × 8′ × 8″ = 28,160 c.ft. At Rs. 12 per 100 c.ft.	..	3,379
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 40 per 100 c.ft.	..	6,160	....		..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each		240	40 nos. at Rs. 6 each	..	240
			18,635			6,475
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		1,864			648
	Total	..	20,499			7,123
	Say	..	20,500			7,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	6 miles.	20,500 per mile.	1,23,000	6 miles.	7,500 per mile.	45,000
Constructing minor bridges of length up to 30 ft.	65 r.ft.	330 per r.ft.	21,450	30 r.ft.	330 per r.ft.	9,900
Constructing reinforced concrete pipe culverts.	24 r.ft.	300 per r.ft.	7,200	16 r.ft.	300 per r.ft.	4,800
Reconditioning existing bridges and culverts.	..	..	..	50 r.ft.	40 per r.ft.	2,000
Total ..			1,51,650			61,700
Say ..			**1·75 lakhs.**			**0·75 lakh.**

Estimate No. 6.

Road No. A—Sub-section 6—Kesiary to Nayagram.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs. a.
1	20	90	2·00	1·00	..	..	3	15	20	13	36 12
2	20	80	2·50	1·00	..	..	3	15	20	13	37 12
3	20	60	2·50	1·50	..	..	3	15	20	13	38 12
4	20	60	3·00	1·50	..	..	3	15	20	13	39 12
5	20	80	3·50	2·50	..	..	3	15	20	13	40 12
6	20	50	4·00	2·00	..	..	4	16	20	13	41 12
Total 6	120	420	17·5	..	..	..	19	91	120	78	235 8
Average	20	70	2·9	..	..	..	3·16	15·16	20	13	39 4
Say	..	..	..	..	..	..	4	15	..	15	41 0

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—2′ 0″ masonry culvert	No	No	3	1—3′ diameter R. C. pipe culvert.
		1—2′ 0″ do. ..	,,	,,	3	1 ditto.
2	3	2—8′ 0″ iron bridge ..	,,	,,	20	Bridge.
		1—3′ 0″ C. I. pipe culvert	,,	,,	3	1—3′ diameter R. C. pipe culvert.
3	3	1—3′ 0″ do. ..	,,	,,	3	1 ditto.
		1—3′ 0″ do. ..	,,	,,	3	1 ditto.
		1—3′ 0″ do. ..	,,	,,	3	1 ditto.
4	3	2—8′ 0″ iron bridge ..	,,	,,	20	Bridge.
		1—2′ 0″ C. I. pipe culvert	,,	,,	3	1—3′ diameter R. C. pipe culvert.
5	3	3—15′ iron bridge ..	,,	,,	50	Bridge.
		1—3′ 0″ C. I. pipe culvert	,,	,,	3	1—3′ diameter R. C. pipe culvert.
6	4	3—10′ 0″ iron bridge ..	,,	,,	30	Bridge.
		1—3′ 0″ C. I. pipe culvert	,,	,,	3	1—3′ diameter R. C. pipe culvert.
		*1—3500′ 0″ Subarnarekha river unbridged.	..	..	2,000	Bridge (excluded from total).
Total 6	..	..	..	..	147	or 24·5 r.ft. per mile.
		Bridges of over 100 ft. in length			2,000	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 6 \times (30—24·5) = 28$ r.ft.

∴ R. C. pipe culverts $= \frac{1}{4} \times 28' = 7$, say	..	9
Minor bridges up to 30 ft. $= \frac{3}{4} \times 28' = 21$, say	..	20
Total		2,176 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft.	..	2,000
Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	90
Constructing reinforced concrete pipe culverts	..	36
Total		2,176 r.ft.

*Railway bridge over this river $= \begin{cases} 11 \times 170' = 1,870 \text{ ft.} \\ 2 \times 60' = 120 \text{ ft.} \end{cases}$

1,990 ft.

Midnapore—Estimate No. 6—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.	S.ft.	Cost. Rs.	Specification B. Details.	S.ft.	Cost. Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing 5,280′ × 20′ =	105,600		*Deduct* existing 5,280′ × 20′ =	105,600	
		485,760			485,760	
	= 33·7 bighas at Rs. 70 per bigha		2,359	= 33·7 bighas at Rs. 70 per bigha		2,359
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing 5,280′ × $\frac{15' + 20'}{2}$ × 2·9′ =	267,960		*Deduct* existing 5,280′ × $\frac{15' + 20'}{2}$ 2·9′ =	267,960	
		582,120			524,040	
	At Rs. 4 per 1,000 c.ft. ..		2,328	At Rs. 4 per 1,000 c.ft.		2,096
Turfing ..	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft. ..		333	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft. ..		333
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..		581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft. ..		581
Soling ..	5,280′ × 10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft. ..		5,808	5,280′ × 8′ = 42,240 s.ft. .. At Rs. 6 per 100 s.ft. ..		2,534
Laterite metal	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 15 per 100 c.ft. ..		2,640	5,280′ × 8′ × 8″ = 28,160 c.ft. At Rs. 15 per 100 c.ft. ..		4,224
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 41 per 100 c.ft. ..		6,314	....		..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			26,477			12,367
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,648			1,237
	Total ..		29,125			13,604
	Say ..		29,500			14,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate. Rs.	Cost. Rs.	Specification B. Quantity.	Rate. Rs.	Cost. Rs.
Improving existing unmetalled road ..	6 miles.	29,500 per mile.	1,77,000	6 miles.	14,000 per mile.	84,000
Constructing major bridges of length above 300 ft. (Subarnarekha river).	2,000 r.ft.	545 per r.ft.	10,90,000	2,000 r.ft.	545 per r.ft.	10,90,000
Constructing approaches to above ..	2 sets.	6,000 each.	12,000	2 sets.	6,000 each.	12,000
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	90 r.ft.	330 per r.ft.	29,700	90 r.ft.	330 per r.ft.	29,700
Constructing reinforced concrete pipe culverts.	36 r.ft.	300 per r.ft.	10,800	36 r.ft.	300 per r.ft.	10,800
Total ..	..	..	13,38,500	..	..	12,45,500
Say ..	..	..	**13·5 lakhs.**	..	..	**12·5 lakhs.**

ESTIMATE No. 7.

Road No. A—Sub-section 7—Nayagram to Dhumsai.

Part (1) Width of land, particulars of embankment and rates for various items of work.

Mileage	Land: Existing width	Land: Cost per bigha	Embankment: Existing height.	Height above or below H.F.L: Above	Height above or below H.F.L: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs. a.
1	40	30	2·0	1 5	..	.	3	19	40	13	42 12
2	40	30	2·0	1 5			3	20	40	13	43 12
3	40	30	2 0	1·5			3	22	40	13	44 12
4	40	30	2·5	1 0			3	20	40	13	45 12
5	40	40	2 5	1 0			3	19	40	13	46 12
6	50	25	1 0		0 5	1 0	3	20	40	13	47 12
7	50	30	1 5	0 5			3	21	40	13	48 12
8	40	30	1 0	0 5			3	21	34	13	49 12
9	40	25	1 0	0 5			3	19	36	13	50 12
10	40	25	1 0	0 5			3	22	36	13	51 12
11	45	10	1 0	0 5			3	21	34	13	52 12
12	50	30	1 5	1 0			3	22	40	13	53 12
13	45	30	1 5	1 0			3	21	35	13	54 12
14	50	30	1 0	0 5			3	21	36	13	55 12
15	50	30	1 0	0 5			3	22	36	13	56 12
Total 15	660	455	22 5	.			45	310	567	195	746 4
Average	44	30 3	1 5				3	20 6	37 8	13	49 12
Say		40		.			..	20	38	15	51 0

Prevailing average rate for

		Rs a			Rs. a.
Earthwork	1,000 c ft	4 0	Single brick soling 3"	. 100 s ft.	6 0
Turfing	1,000 s ft	3 8	Double brick soling 6"	. 100 s ft	11 0
Brick on end edging	100 r ft	5 8			

Parts 2 (a) and (2) (b) Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage	Average height of bank above G.L of improved road	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft: R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	Nil				
2	3	2- 20′ 0″ iron bridge .	No	No	40	Bridge.
3	3	1 10′ 0″ do. ..	,,	,,	15	ditto.
4	3	Nil				
5	3	1 30′ 0″ W. bridge .	No	No	30	ditto.
6	3	1 30′ 0″ causeway	.	..	15	ditto.
		1 -10′ 0″ do	..	..	6	2—3′ dia. R. C. pipe culvert.
7	3	1—6′ 0″ do.			3	1 ditto.
8	3	1 10′ 0″ do	..	.	6	2 ditto.
9	3	1 - 10′ 0″ do	.	..	9	3 ditto
		1 5′ 0″ do.	.	.	3	1 ditto.
10	3	1 - 40′ 0″ do.	..	..	20	Bridge.
11	3	1 -20′ 0″ do.	.	..	15	ditto.
		1 -5′ 0″ do. .	..	..	3	1—3′ dia. R. C. pipe culvert.
12	3	1 -5′ 0″ do.	..	..	3	1 ditto.
13	3	Nil				
14	3	1 —10′ 0″ causeway ..	..	..	6	2 ditto.
15	3	1 - 50′ 0″ do. ..	..	..	30	Bridge.
Total—12 miles excluding mileages having no bridges and culverts.					204	or 17 r.ft. per mile.

Allowance of 25 r ft per mile excluding bridges of over 100 ft. in length is considered necessary

Extra provision for R C pipe culverts and minor bridges of length up to 30 ft $= 15 \times (25 - 17) = 120$ r. ft.

R C pipe culverts $= \frac{1}{4} \times 120 = 30$	..	30
Minor bridges up to 30 ft $= \frac{3}{4} \times 120 = 90$.	..	90
Total	..	324 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft. .	..	40
Constructing minor bridges of length up to 30 ft. ..	..	215
Constructing reinforced concrete pipe culverts ..	..	69
Total	..	324 r.ft.

Midnapore—Estimate No. 7 *-concld*

Part (3)—Analysis of rough cost per mile of road (excluding bridging)

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details		Cost
		S.ft.	Rs.		S ft.	Rs.
Land ..	5,280′ × 99′ —	522,720		5,280′ × 99′ —	522,720	
	Deduct existing 5,280′ × 44′ —	232,320		*Deduct* existing 5,280′ × 44′ —	232,320	
		290,400			290,400	
	— 20·2 bighas at Rs. 40 per bigha .		808	20 2 bighas at Rs 40 per bigha		808
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117′ =	617,760		5,280′ × 108′	570,240	
	Deduct existing 5,280′ × (20′ + 38′)/2 × 1 5′ =	229 680		*Deduct* existing 5,280′ × (20′ + 38′)/2 × 1 5′	— 229,680	
		388,080			350,560	
	At Rs. 4 per 1,000 c ft ..		1 552	At Rs 4 per 1 000 c ft		1,402
Turfing	5,280′ × 13 5′ — 71 280 s ft At Rs 3-8 per 100 s ft		249	5,280 13 5′ 71,280 s ft At Rs 3 8 per 100 s ft		249
Edging ..	5,280′ × 2 — 10,560 r ft At Rs 5 8 per 100 r ft.		581	5,280′ × 2 10,560 r ft At Rs 5 8 per 100 r ft		581
Soling ..	5,280′ × 10″ 52,800 s ft. At Rs 11 per 100 s ft		5,808	5,280′ × 8′ 42,240 s ft At Rs 6 per 100 s ft		2,534
Laterite metal	5,280′ 10′ × 4″ 17,600 c ft At Rs 15 per 100 c ft .		2,640	5,280 × 8′ × 8″ = 28,160 c ft At Rs 15 per 100 c ft		4,224
Stone metal ..	5,280′ × 10′ 3½″ 15,400 c ft. At Rs 51 per 100 c ft		7,854			.
Wearing course	5,280′ × 10′ 52,800 s.ft. At Rs. 11-2 per 100 s ft.		5,874	.		.
Posts and pillars	40 nos. at Rs 6 each		240	40 nos at Rs 6 each .		240
			25,606			10 038
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,560			1,003
	Total .		28,166			11,041
	Say		28,500			11,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost	Specification B. Quantity	Rate.	Cost
		Rs	Rs.		Rs	Rs
Improving existing unmetalled road ..	15 miles	28,500 per mile	2,77,500	15 miles	11,000 per mile	1,65,000
Constructing minor bridges of length above 30 ft.	40 r ft.	260 per r.ft	10,400	40 r ft	260 per r ft.	10,400
Constructing minor bridges of length up to 30 ft.	215 r.ft.	330 per r ft	70,950	215 r.ft.	330 per r.ft.	70,950
Constructing reinforced concrete pipe culverts.	69 r.ft.	300 per r.ft.	20,700	69 r ft.	300 per r.ft.	20,700
Total ..			3,79,550			2,67,050
Say ..			4 0 lakhs.			2 75 lakhs.

ESTIMATE No. 8.

Road No. B—Sub-section 1—Midnapore to Abradihi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width	Cost per bigha	Existing height	Height above or below H. F. L. Above	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.		
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	40	150	3 0	1 0	..	..	4	18	28	17 8	30 12
2	50	125	3·0	1 0	..	..	4	15	30	17 8	29 12
3	55	120	3·0	1·0	..	..	4	17	30	17 8	28 12
4	90	125	4·5	2 5	.	.	5	21	40	17 8	27 8
5	85	110	4·0	2·0	..	..	4	22	45	17 8	27 8
6	60	100	2·0	0·5	..	..	3	22	29	17 8	28 12
7	60	100	2·0	0·5	..	..	3	22	30	17 8	29 12
8	70	100	2·0	0 5	..	..	3	21	30	17 8	30 12
9	70	80	2·5	1 0	..	..	3	21	30	17 8	31 12
10	70	90	2·0	0 5	..	..	3	18	27	17 8	32 12
11	60	95	2 5	1 0	.	.	3	23	32	17 8	33 12
12	55	90	2·5	1 0	..	.	3	19	28	17 8	34 12
13	50	100	2 0	0·5	..	.	3	20	28	17 8	35 12
14	55	100	2 0	0·5	.		3	10	27	17 8	36 12
Total 14 0	870	1,485	37	..	.	.	48	278	434	235 0	439 0
Average	62 1	106 3	2 6	..	.	.	3 4	19·9	31	17 8	31 6
Say .	62	110	2 6	..	.		4	20	31	19 0	33 0

Prevailing average rate for —

			Rs. a.				Rs. a.
Earthwork .	.	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing ..	..	1,000 s ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	1,000 r ft	5 8				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G L. of improved road	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost	Replacement proposals in r ft R ft.	Type.
1	2	3	4	5	6	7
	Ft					
1	4	1—2′ 6″ arched m. culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ do.	„	„	6	2 ditto.
		1—6′ 0″ T. P. culvert	„	„	6	2 ditto.
		1—3′ 0″ arched m. culvert	„	„	3	1 ditto.
		1—3′ 0″ do.	„	„	3	1 ditto.
		1—2′ 9″ do. ..	„	„	3	1 ditto.
2	4	1—7′ 6″ culvert ..	„	„	15	Bridge.
		1—3′ 3″ arched m culvert	„	„	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	„	„	3	1 ditto.
3	4	1—2′ 9″ do. ..	„	„	3	1 ditto.
		3—10′ 0″ do. .	„	„	30	Bridge.
		4—15′ 0″ do. ..	„	„	60	ditto.
4	5	1—2′ 0″ do. ..	„	„	3	1—3′ dia. R. C. pipe culvert.
		1—5′ 0″ do. ..	„	„	6	2 ditto.
5	4	2—3′ 0″ do. ..	„	„	6	2 ditto.
		2—2′ 9″ do. ..	„	„	6	2 ditto.
6	3	Nil.				
Carried over		146′ 3″			162	

ESTIMATE No. 23.

Road No. 0—Sub-section 2—Ambalgram to Ketugram.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H. F. L.: Above.	Height above or below H. F. L.: Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	12	150	0·5	..	3	1·0	6	6	10	15 0	26 4
2	10	150	0·5	.	2	1·0	4	6	8	15 0	27 0
2·15	12	150	0·5	..	2	0·15	4	6	8	15 0	27 12
Total 2·15	34	450	1·5	..	.	..	14	18	26	45 0	81 0
Average ..	11·33	150	0·5	..	..	..	4·66	6	8·66	15 0	27 0
Say ..	11	..	..	..	..	..	5	..	9	18 0	..

Analysis of rates for 100 c.ft. of stone metal.

	Rs.	a.
Cost of stone at Pakur ..	5	8
Railway freight from Pakur to Gangatikuri station ..	9	3
Unloading and other charges ..	1	8
Carting up to 1st mile (distance 3 miles from Gangatikuri station) ..	3	12
Stacking on road side ..	0	8
Consolidation ..	4	4
Contractor's profit at 10 per cent. ..	1	8
	26	3
Say ..	26	4

Annas 12 is added per mile for extra mileage of carting.

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork ..	1,000 c.ft.	4 0	Single brick soling 3" ..	100 s.ft.	6 0
Turfing ..	1,000 s.ft.	3 8	Double brick soling 6" ..	100 s.ft.	11 0
Brick-on-end edging ..	100 r.ft.	5 8			

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft: R. ft.	Replacement proposals in r.ft: Type.
1	2	3	4	5	6	7
	Ft.					
1	6	1—130' 0" Kandar Khal unbridged ..	..	..	130	Bridge (excluded from total).
		1—25' 0" low land ..	..	..	20	Bridge.
		1—4' 0" arched masonry culvert ..	No	No	4	1—4' diameter R. C. pipe culvert.
		1—4' 0" do. ..	,,	,,	4	1 ditto.
2	4	1—3' 0" gap ..	..	..	4	1 ditto.
2·15	4	1—4' 0" arched masonry culvert ..	No	No	4	1 ditto.
Total 2·15		40 r.ft. or 18·6 r.ft. per mile ..		..	36	or 16·74 r.ft. per mile.
		Bridges of over 100 ft. in length		..	130	

Allowance of 20 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.	
Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 2·15 (20—16·74) = 7·33 r.ft.	
R. C. pipe culverts, say	8
Minor bridges up to 30 ft.	Nil
Total ..	174 r.ft.

Abstract of the above.

[illegible] bridges of length up to 300 ft. ..	[illegible]
[illegible] bridges of length up to 30 ft. ..	20
[illegible] pipe culverts	[illegible]

Burdwan—Estimate No. 23—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging)

Existing unmetalled road

Items	Specification A — Details		Cost	Specification B — Details		Cost
			Rs			Rs.
		S ft			S ft	
Land	5,280 × 124	654,720		5,280' × 124	654,720	
	Deduct existing 5,280 × 11	58,080		*Deduct* existing 5,280 × 11'	58,080	
		596,640			596,640	
	= 41 4 bighas at Rs 150 per bigha		6,210	= 41 4 bighas at Rs 150 per bigha		6,210
		C ft			C ft	
Earthwork	5,280 × 209 =	1,103,520		5,280' × 196	1,034,800	
	Deduct existing 5,280 × (6 + 9)/2 × 0 6"	19,800		*Deduct* existing 5,280 × (6' + 9)/2 × 0 6 =	19,800	
		1,083,720			1,015,000	
	At Rs 4 per 1,000 c ft		4,336	At Rs 4 per 1,000 c ft		4,060
		S ft			S ft	
Turfing	5,280 × 22 5	118,800		5,280 × 22 5	118,800	
	At Rs 3 8 per 1,000 s ft		416	At Rs 3 8 per 1,000 s ft		416
		R ft			R ft	
Edging	5,280 × 2	10,560		5,280 × 2	10,560	
	At Rs 5 8 per 100 r ft		581	At Rs 5 8 per 100 r ft		581
		S ft			S ft	
Soling	5,280 × 10	52,800		5,280 × 8' =	42,240	
	At Rs 11 per 100 s ft		5,808	At Rs 6 per 100 s ft	..	2,534
		C ft			C ft.	
Jhama metal	5,280 × 10 × 4" =	17,600		5,280' × 8' × 8" =	28,160	
	At Rs 18 per 100 c ft		3,168	At Rs 18 per 100 c ft	..	5,069
Stone metal	5,280 × 10 × 3½	15,400				
	At Rs 27 per 100 c ft		4,158			
		S ft				
Wearing course	5,280 × 10 =	52,800				
	At Rs 11 2 per 100 s ft		5,874			
Posts and pillars	40 nos at Rs 6 each		240	40 nos at Rs 6 each		240
			30,791			19,110
	Add contingencies at 7½ per cent; *Add* tools and plant at 2½ per cent		3,079			1,911
	Total		33,870			21,021
	Say		34,000			21,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items	Specification A — Quantity	Rate	Cost.	Specification B — Quantity	Rate	Cost.
		Rs.	Rs.		Rs	Rs.
Improving existing unmetalled road ..	2·15 miles	34,000 per mile.	73,100	2·15 miles.	21,000 per mile	45,150
Constructing major bridges of length from 110 ft to 300 ft	130 r ft	340 per r ft.	44,200	130 r.ft.	340 per r ft.	44,200
Constructing approaches to above .	2 sets.	2,500 per set.	5,000	2 sets.	2,500 per set.	5,000
Constructing minor bridges of length up to 30 ft	20 r ft	330 per r.ft.	6,600	20 r.ft.	330 per r.ft.	6,600
Constructing reinforced concrete pipe culverts . ..	24 r ft	300 per r ft.	7,200	24 r.ft.	300 per r.ft.	7,200
Total ..	..	..	1,36,100	..	..	1,08,150
Say ..	..	..	1·5 lakhs.	..	..	1·25 lakhs.

2. With reference to paragraphs 2, 4 and 5 of the resolution of the District Board, I have the honour to state as follows.

Paragraph 2.—The views of the Board regarding the alternative alignment to the Grand Trunk Road have been noted.

Paragraph 4.—The inclusion in the scheme of a road running more or less directly between Boinchee and Kalna would mean the provision of an extra length of road of about 13 miles along an alignment not more than 6 miles away from other roads selected for improvement. My scheme does not provide for the location of parallel roads at such close intervals. Further, this proposal linking the two branches of the railways as it does will serve to short circuit the railway and is therefore objectionable. Therefore, while admitting the usefulness of the proposal, I regret my inability to include it in my recommendations.

Paragraph 5.—I quite agree with the proposal that a roadway may be provided along the Anderson weir at Rondia with a connection to the Grand Trunk road on the north and to item K of the Bankura road scheme on the south, which item connects Rangametia and Sonamukhi in the Bankura district. This is being entered in my map and list for inclusion in my report and a supplementary descriptive list in respect of this item, which has been designated item Q, is attached for incorporation in the list previously supplied.

A copy of this letter is being forwarded direct to the Chairman of the District Board for information.

Memo. No. 3558 R.D., dated the 11th August 1937.

Copy together with list forwarded to the Chairman, District Board, Burdwan, for information.

Supplementary descriptive list of the selected roads.

Reference on map.	Classification.	Location.		Sub-sections.
		From—	To—	
Q	Inter-district—Main	Panagar on Grand Trunk road, item A.	Rondia (Anderson weir).	(1) Panagar to Rondia dam (Anderson weir).

CHAPTER XII.

Hooghly.

I—Situation, boundaries, area, population and administration.

The district of Hooghly forms part of the Burdwan Division. It is situated between 22°36′ and 23°14′ north latitude, and between 87°30′ and 88°30′ east longitude. It is bounded on the north by the district of Burdwan; on the east by the river Hooghly, which separates it from the the district of Nadia and 24-Parganas; on the south by the districts of Howrah and Midnapore; and on the west by the districts of Midnapore, Bankura and Burdwan. Except for short distances the boundaries on three sides are artificial; that on the east (the river Hooghly) is natural. Its extreme length from north-east to south-west is 63 miles, and its extreme width from north-west to south-east is 35 miles.

The area of the district is 1,188 square miles, and its population, according to the latest census returns, is 1,114,255, showing a density of 938 per square mile.

The headquarters of the district is at Hooghly-Chinsura which is situated on the right bank of the river Hooghly. This is also the chief town in respect of both population (32,634) and commercial importance.

The district is divided for administrative purposes into three subdivisions and eighteen thanas, the names, areas and population of which are shown in Appendix I to this chapter.

The district is in charge of a Collector, who administers it with the help of the usual complement of officers and staff. This officer is also the District Magistrate. A portion of the administration relating to Local Education, Public Health, Building and Communications is under the control of a District Board, under which body there are three Local Boards, one in each subdivision. There are also six municipalities in the district managing the affairs of the municipal areas.

II—Physical features.

The district resembles a butterfly in shape, the right wing, comprising the area on the east of the Damodar, being considerably larger than the left.

The eastern portion of the district, lying between the Hooghly and Darakeswar, forms a flat alluvial plain, intersected by a number of sluggish rivers and streams. Although in general appearance this tract appears to be perfectly flat, there is in reality a gradual slope from north and west to south and east, and the courses of the rivers, streams and drainage channels follow this direction. The river banks are high and the sites of villages are raised. The small triangular area in the west, lying beyond the river Darakeswar, presents the appearance of a slightly undulating plain, covered with a soil of alluvium mixed with debris of laterite. Here the slope is more pronounced. In the extreme west the country becomes distinctly rocky, and forms a continuation of the uplands of Bishnupur.

Thus, for practical purposes, the district may be regarded as containing two main divisions—a small area in the west, comprising the uplands, and a larger area in the east, forming the plains, the river Darakeswar being the dividing line.

In the western area the country is drained by a number of small streams running into the Darakeswar. These streams display the usual characteristics of hill streams—sandy beds, rapid currents and a tendency to sudden rise and fall during the rains. In the cold weather they are usually dry. This area is characterised by a paucity of swamps and lowlying rice-fields, and the presence of patches of scrub jungle here and there.

The eastern area includes two distinct tracts, the first is a tract of lowlying land stretching between the rivers Damodar and Darakeswar The beds of these rivers and their connected streams are being gradually raised by annual deposits of silt and sand, and are already generally higher than the country which they surround or traverse. The land in this tract, although being slowly raised, is still more or less subject to constant flood, unless protected by embankments, and consequently cultivation is precarious. The smaller streams add to this uncertainty, as they also come down in flood and frequently change their courses, interlacing with one another in the most unexpected way. This uncertainty is further aggravated by the nature of the deposit—if silt, excellent rabi crops are raised; if sand, the land becomes sterile. Owing to the floods, the submersion of the country, and the constant changing in the courses of the smaller streams, the construction and upkeep of good roads within this tract is rendered difficult and expensive.

In the second tract, lying between the Hooghly and the Damodar, the country is somewhat higher, and due to this, and to the fact that the Damodar is confined by an unbroken embankment running along its eastern bank, the land is not ordinarily subject to flood, and crops are fairly secure. This area can broadly be divided into two sections, the high riparian strips of land along the banks of the rivers, and the saucer-shaped depressions between them. The former are for the most part taken up by village sites or used for growing vegetables and other suitable crops. The depressions are turned into extensive rice-fields, or if lower in level, form long marshes. A special feature of this tract is that most of the numerous small streams draining the area have more or less silted up and have no visible outfall, so that there is no current once the rains cease. The streams then become a succession of stagnant pools, while the land, being undrained (except by percolation), becomes water-logged.

III—River system and marshes.

The district is mainly the product of its rivers, and is still watered and drained by them. There are three large rivers, viz., Hooghly, Damodar and Darakeswar (which in its lower reaches becomes the Rupnarayan), and a large number of small streams, which are either the offshoots or the tributaries of the larger. The deltaforming activities of the Hooghly have in recent times been restricted to the formation of islands or banks on the sides or in the middle of its bed, and in some few places to the deposition of silt over comparatively small areas of the district, which are inundated by its waters during high flood. On the other hand, the Damodar and the Darakeswar still display great land-forming activities, and, where not restrained by artificial embankments, inundate large areas of country, gradually raising the level of the surface by silt deposition.

In addition to the rivers proper, both large and small, there are a considerable number of minor drainage channels which interlace with the rivers and with one another, and help to carry off water from the low land. These, however, are now gradually silting up.

The principal rivers are:—

(1) Hooghly.
(2) Damodar.
(3) Darakeswar.
(4) Kana Damodar.
(5) Madaria khal.
(6) Kana Darakeswar.
(7) Bally khal.
(8) Saraswati.
(9) Gangan or Behula.
(10) Kunti or Kana Nadi.
(11) Besia khal.
(12) Mundeswari.
(13) Amodar.
(14) Tarajuli.

A description of these rivers will be found in Appendix I to Chapter II, in which the characteristics of the more important rivers in the province have been briefly described.

There are no lakes in the district, but a number of large catchment basins are found in which water accumulates during the rains, forming long narrow stretches of water. Towards the close of the rains the lower lands are converted into swamps suitable for the cultivation of winter rice; and the lowest lands lying between the raised banks of rivers become jhils or extensive swamps. These jhils are partly drained by rivulets, but generally contain water even in the dry months. The greatest number of marshes is found in the thanas of Pandua and Polba in the Hooghly subdivision, Chanditala and Krishnagar in the Serampore subdivision, and Khanakul in the Arambagh subdivision. The most extensive marshes are the Khanyan marsh in thana Pandua, the Ghia Kana Nadi marsh, the Dankuni marsh in thana Chanditala, and the Damodar khal-Kana Darakeswar marsh in thana Khanakul.

IV—Climate and rainfall.

The climate of the district is hot and moist. The temperature during the summer months is high and increases steadily till the end of May. The heat is however somewhat relieved in the afternoons by a fairly cool breeze. Hailstorms are frequent in March and April, and the weather is generally cyclonic towards the end of the rains. The climate in the cold weather is pleasantly cool.

The climate of the area west of the Darakeswar is however somewhat different, being drier and very similar to that of the Bankura district which adjoins it.

The normal annual rainfall is 57·2 inches, of which about 5·23 inches fall during the months from November to April.

V—Floods and inundations.

The portion of the district lying to the west of the Darakeswar is not subject to extensive inundation by flood. The narrow strip of country lining the west bank of this river is however occasionally inundated during high floods. The central portion of the district lying between the Darakeswar and the Damodar is subject to very severe flooding, which on occasions has been known to submerge almost the entire area. The eastern portion of the district between the Damodar and Bhagirathi is lowlying, and under natural conditions would be subject to very extensive inundation, but due to a long protective embankment running along the eastern bank of the Damodar, and the road and railway embankments running along the western bank of the Bhagirathi, the flood waters of these rivers are shut out from the area, which is thus only affected by flooding caused by the local rainfall. All lowlying depressions become shallow lakes after heavy rainfall, and, due to defective drainage, the water stands on the land for long periods.

The extent to which the district is subject to inundation is indicated on a sketch map of the district (Plate IX), areas usually inundated at intervals of from one to three years, and those subject to occasional inundation, being shown in different colours.

VI—Soils, crops and irrigation.

The soil (except in thana Goghat) consists entirely of new alluvium, the deposit (5 to 10 feet thick) resting on a sub-soil of tenacious clay varying in thickness from 10 to 30 feet. The surface alluvium, where formed from the silt deposits of the Hooghly and the Saraswati, is of tough clay (*entel*), but that formed from the silt of the Damodar and its branches is light and porous. At Magra and in thana Arambagh the Damodar has deposited

a layer of sand on the subsoil. In the swamps (which receive the drainage of the villages) the bottom is usually of sticky tough clay. In the north of the district the soil is partly a laterite clay and partly a red-coloured coarse grained sand (eastern Vindhyan formation). In thana Goghat the soil is composed of the detritus of the uplands, i.e., broken laterite, kankar and older alluvium.

The principal crops of the district are rice (the staple crop), pulses, oilseeds, jute, sugarcane, tobacco and betel-leaf. Fruits are also grown, chiefly mango, jack, papaya, leechees, pine-apple, custard-apple and melon. Limes and tamarind grow well. Vegetables are also grown extensively, the district being noted for its large vegetable gardens. Among miscellaneous products may be mentioned chillies, mulberry, bamboos and the *hugla* reed.

Artificial irrigation is practised to some extent in this district. Canal irrigation is represented by the Eden Canal system, which takes off from the Damodar river in the Burdwan district, and in its lower reaches irrigates a small area in the centre of the northern portion of the Hooghly district. Irrigation by the tank system, from the large number of tanks, jheels and khals with which the tract is covered, is extensively resorted to for the supply of the water necessary for the cultivation of special crops, such as sugarcane, potatoes, onions, betel-leaf and spring rice. These sources of supply are also used for irrigating other crops in years of drought.

VII—Industries, hâts and melas.

From the industrial point of view the district may be divided into two portions, the first being a long narrow strip lining the west bank of the Hooghly and extending from the southern boundary of the district to near Magra, at which place the Grand Trunk Road leaves the river and takes a westerly and inland direction. The second, which includes the rest of the district, is mainly agricultural, and here the only factory industry followed on a large scale is rice-milling. In the first portion, on the other hand, there are as many as seven separate industrial towns, containing 38 factories, including cotton, jute and rice-mills and other miscellanous factories. The strip is exceptionally well served by communications, having the river Hooghly, the East Indian Railway, and the Grand Trunk Road all most conveniently disposed. Most of the mills and factories are situated either on or close to the western bank of the river. The disposition of the various mills and factories in both the portions of the district noticed above is: 23 at Serampore, 14 at Pandua, 9 at Magra, 4 at Utterpara, 3 each at Chinsura and Bhadreswar, and 1 each at Chanditola, Tarakeswar and Arambagh. The names given above refer to thana areas. Brick and tile-making and the grinding of surki are carried on in the land adjoining the Hooghly and the Bally khal.

Of the non-factory industries, cotton-weaving is the most important. Silk and tusser weaving, rope-making, the manufacture of brass and bell-metal ware, the manufacture of sugar, carpentry, chikon-work, basket-making and pottery are also pursued as industries in various parts of the district.

About 8·7 per cent. of the total population is solely engaged in industries.

As is the case in all districts of the province the sale of local produce and the purchase of every-day necessities take place at rural markets called "hâts," the duration of which is limited to a day or less, and at more pretentious fairs called "mêlas," which may extend into several days or even weeks. Hâts, which are usually held weekly, but may in the more thickly populated areas be held bi-weekly or even daily, vary greately in size, the attendance ranging from a modest gathering of 50 or so to as much as several

thousands. Mêlas are periodic gatherings usually taking place annually, although in some cases two or three mêlas may be held during the year at the same place. Excluding those of minor importance there are 128 hâts and 79 mêlas in the district. The particulars of these are given in Appendix II to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate IX), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

VIII—Waterways, steamer services and ferries.

The district abounds in navigable waterways, the most important of which are the rivers Hooghly, Damodar and Rupnarayan, the first named having from time immemorial been the highway for the commerce of Western Bengal. Moreover, in the rains almost all the creeks (khals) and channels are able to carry boats of at least 10 maunds burden. Of the three rivers mentioned, the Hooghly is navigable all the year round throughout its length along the district (50 miles) by river steamers and boats of all sizes; the Damodar is navigable in the rains by boats of 1,000 maunds burden, while the Rupnarayan is navigable from Bandar downwards to Ranichak (6 miles) by river steamers in the rains and by boats of 20 maunds burden at other time of the year. The only other important navigable channel is the Darakeswar which maintains a navigable depth for boats of shallow drafts only during the rains. The rivers Saraswati, Panseuli and Mundeswari are navigable by small boats during floods only. The Behula, Kunti, Kana Nadi, Kana Damodar, Madaria khal and the Danconi drainage khal are also navigable by small boats during the rainy season.

There is a tri-weekly service of steamers belonging to the Calcutta Steam Navigation Company between Hatkhola Ghat, Calcutta, and Kalna in Burdwan. This line is convenient for passengers for Tribeni and places further up, as they are situated some distance from the East Indian Railway. Another line of steamers runs from Armenian Ghat, Calcutta, to Ranichak in the Midnapore district. In the rains small steamers go up to Ghatal, touching at Bandar in this district.

Excluding minor private ferries there are altogether eight recognised public ferries in the district, all controlled by the District Board. Particulars of the more important of these are given in Appendix III to this chapter, and their locations are shown in the skeleton sketch map of the district (Plate IX), each item being indicated by an index number which corresponds with the number assigned to the particular item in the list.

IX—Railways.

Railway communication within the district is provided by nine sections of railway with a total length of about 174·5 miles. The location of these railways is shown in the skeleton sketch map of the district (Plate IX), and a few of the more important particulars relating to them are given in Appendix IV to this chapter. As will be seen from the map the extent to which the country is served by its railways varies considerably. Taking the river Damodar as the dividing line, the eastern section of the district, which contains the entire railway system, is very well served, the lines being well placed and within easy reach of all the important places in the tract. On the other hand the western section, which comprises about one-third of the total area of the district, is marked by the entire absence of railways, and is so cut off by the Damodar from the rest of the district that little advantage can be taken of the railways situated on the other side of this river. The district contains approximately 14·68 miles of railway in respect of each 100 square miles of country.

X—Existing road system.

The road system at present in existence in the district comprises an approximate total length of 2,387 miles of metalled and unmetalled roads of all classes, for the upkeep of which several authorities are responsible. The mileage of the roads under each administrative authority in the district, and the average annual expenditure incurred on their upkeep is given below. The figures shown have been obtained from the respective authorities, but must be taken as being only approximately correct, as in many cases the records and accounts are not kept in such a way as to make it possible to obtain accurate information under the separate heads into which the roads have been divided. They are, however, of sufficient accuracy to serve the purpose of the present report :—

Class.	Authority responsible for upkeep.	Metalled roads.			Unmetalled roads.		
		Mileage on 31st March 1937.	Total annual expenditure being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.	Mileage on 31st March 1937.	Total annual expenditure, being the average for quinquennium ending 31st March 1937.	Average annual expenditure per mile.
1	2	3	4	5	6	7	8
		Miles.	Rs.	Rs.	Miles.	Rs.	Rs.
	Government roads.						
I	Maintained by the Communications and Works Department.	(*a*) 46	74,240	1,632	..	..	..
	District roads.						
II	Maintained directly by the District Board.	(*b*) 118	50,879	(*c*) 470	477	17,589	36
	Subdivisional roads.						
III	Manitained by Local Boards working under the control of the District Board.	..	..	..	554	8,319	15
	Urban roads.						
IV	Manitained by municipalities	106	Incomplete.	..	73	Incomplete.	..
	Village roads.						
V	Maintained by Union Boards.	(*d*) 3	250	83	1,010	14,091	14
	Total ..	273	1,25,369	..	2,114	39,999	..

(*a*) Includes (*i*) 11·5 miles of bitumen or tar grout, and (*ii*) 34·00 miles of bitumen or tar paint.

(*b*) Includes (*i*) 0·26 mile of bitumen or tar grout, (*ii*) 0·15 mile of bitumen or tar paint, (*iii*) 101·65 miles of hard stone metal, and (*iv*) 16·42 miles of brick-metal.

(*c*) Represents average on 108·2 miles.

(*d*) Brick-metal.

The first two of the classes listed above, viz., *Government* roads and *district* roads, form the main lines of communication in the district, and constitute the most important portion of the road system. A detailed list of the roads included under these two classes is given in Appendix V to this chapter, and the alignments followed by them are shown in the skeleton sketch map of the district (Plate IX), each item being indicated by the same index number in both the map and the list so as to facilitate reference. In the case of the *district* roads these index numbers also correspond with the schedule numbers shown in the most recent approved

schedule of roads issued under the authority of the District Board, in which will be found brief particulars showing crest width, metalled width, number and types of bridges, etc., of all district and subdivisional roads. This record being in existence and always available for reference, no attempt has been made to reproduce the information in the present report. The remaining three classes of roads, viz., *subdivisional, urban and village* roads, are of minor importance from the point of view of the present scheme and have therefore neither been listed nor shown on the map.

XI—Road investigations and traffic census.

An account of the investigations carried out with the object of studying the nature of the existing roads and bridges in the several districts of the province has already been given in Chapter V, which deals with this question for the province as a whole. As explained in the same chapter, details of the observations taken, although not included in the present report, have been placed on record in the office file. In this district the examination made and particulars recorded relate to 189 miles of road and 6,235 running feet of bridging, which includes 4 major bridges and 380 minor bridges and culverts. Particulars of the bridges on the existing railways in the district were also collected to help in the examination of the general drainage conditions and the study of the important question of obstruction to the same caused by the construction of raised embankments. A classification according to length of opening has been made of the waterway of the bridges on the more important road and railway embankments existing in the district. This is shown in Appendix VI to this chapter.

A census of traffic was taken by actual count on some of the roads in the district selected as representative of the several classes into which the existing road system could be graded according to volume of traffic carried. Each traffic observation covered a period of seven consecutive days and nights. In a few cases the observations were repeated at the same point at different times of the year, so as to indicate the extent to which the traffic varied. A complete record of the observations taken is given in Appendix VII to this chapter, and an examination of the results will be found in Chapter V, in which the general question of traffic statistics in the province as a whole is dealt with.

On account of the heavy cost involved the preparation of a record of traffic by actual count had to be restricted to only a few roads in the district. Steps were, however, taken to obtain a rough idea of the total traffic on each of the other important roads in the district, the method employed being to have these roads arranged approximately in relative order of traffic importance as compared with the roads on which actual observations had been taken. This was done by the District Engineer in consultation with his staff, these officers having a good knowledge of local conditions, and being in the best position to judge of the probable traffic intensities on the roads under their control. The results, including both the actual observations and the approximations mentioned above, are shown in graphical form in Appendix VIII to this chapter.

XII—Scheme for improved roads.

The general principles followed in selecting the alignments for the roads included in the improved road system in the several districts in the province have already been explained in Chapter VI, and need not be repeated here. In accordance with these principles, a complete scheme has been framed in the district for a road system which is considered sufficiently comprehensive to serve the needs of the district to a reasonable degree, in respect of both internal communication within the district itself, and of inter-district, provincial and inter-provincial communication.

The roads included in the complete district scheme are listed below, each item being assigned an index letter for use in referring to the item in other parts of the report:—

Index letter.	Location.		Approximate length in miles.	Classification.
	From—	To—		
A	Bally ..	Dohipur ..	44	Provincial—Trunk.
B	Baigachhi ..	Keatara ..	34	Ditto.
C	Paita ..	Khatul ..	12	Ditto.
D	Surul-Chowmatha	Harihar ..	10	Ditto.
E	Sepahigachi ..	Kirtichandrapur	30	District—Main.
F	Chinsura ..	Bhandarhati ..	20	Ditto.
G	Bhandarhati ..	Champadanga ..	12	Ditto.
H	Dadpur ..	Bakulia ..	25	Ditto.
I	Inchora ..	Balagarh ..	7	District—Secondary.
J	Serampore ..	Sitapur ..	17	Inter-district—Main.
K	Uttarpara ..	Kalipur ..	5	District—Main.
L	Joyrampur ..	Palaspai ..	19	Ditto.
M	Rajhati ..	Kagnan ..	6	Provincial—Trunk.
N	Arambagh ..	Badanganj ..	15	District—Secondary.
O	Singur ..	Moshat ..	7	Ditto.
		Total ..	263	

A descriptive statement showing particulars of length, route, purpose served, cost, etc., of the items is given in Appendix IX to this chapter, and the location of the roads is shown in the skeleton sketch map of the district (Plate IX), the same index letters being used both in the statement and in the map in order to facilitate reference.

The figures given in the statement to show the approximate cost for the several items included in the scheme are based on rough estimates worked out after brief examination at site and collection of the necessary data. The type of investigations made, and the method employed for preparing the rough estimates, have been described in Chapter VIII, which deals with the question of the preparation of rough estimates for the whole province. As explained in the same chapter it must be clearly understood that the figures furnished in these estimates, although not based on haphazard guess work, cannot be taken as representing correctly the expenditure likely to be involved during actual construction, and cannot therefore be used for obtaining administrative approval.

A record of the observations made and the complete rough estimates for the items of the scheme are given in Appendix X to this chapter. It will be seen that two alternative rough estimates have been prepared for each item, the first in accordance with Specification "A," and the second in accordance with Specification "B." The details of these specifications, and the reasons which have led to the adoption of two alternative standard specifications, have been fully explained in Chapter VII, which deals with the general question of the adoption of standard specifications for the complete road scheme in the whole of the province.

The total length of improved roads proposed in the district is 263 miles, which includes 89 miles of existing metalled road, 122 miles of existing unmetalled road, and 52 miles of entirely new road, these figures being approximate, as the lengths are susceptible to change when the detailed alignments are actually set out. The total estimated cost of the district scheme (inclusive of bridging) stands at Rs. 131·75 lakhs as per Specification "A" and Rs. 94·75 lakhs as per Specification "B." The scheme provides 1 mile of road in respect of every 4·5 square miles of area, or in respect of every 4,237 heads of population in the district. On the assumption that a road, railway or steamer service is capable of tapping the

country lying within 5 miles on either side of it, and neglecting obstructions which may be offered by unbridged rivers, the existing railways and steamer services and the proposed roads, when taken together, will serve 98·3 per cent. of the total area of the district, leaving untapped only 20 square miles of country as indicated in the skeleton sketch map of the district (Plate IX). The area directly served by the road system alone amounts to approximately 1,156 square miles representing 97·3 per cent. of the total area of the district.

The scheme provides for the connection by road of the district headquarters and the headquarters of all subdivisions. Direct road connection has also been provided to sixteen thana headquarters, while the headquarters of the two remaining thanas, although not directly connected, will be within 5 miles of an improved road, which will make it easy for a short connecting link to be added at a later stage.

XIII—Acceptance of district scheme for improved roads by district and other authorities.

A descriptive list of the roads included in the complete district scheme, together with a sketch map showing their positions, was sent to the authorities mentioned below for examination and expression of their opinion as to the suitability of the scheme from their respective points of view. The extent to which the scheme has been approved or objected to by the various authorities is given below:—

(1) District Board.—Approves scheme in full.

(2) Collector.—Approves scheme in full.

(3) Commissioner.—Approves scheme in full.

(4) East Indian Railway.—Approves scheme, but objects to the following items:—

(*i*) Item No. B—in respect of its entire length—Baigachi to Keatara.

(*ii*) Item No. II—in respect of the length between Inchura and Bakulia.

(5) Bengal Provincial Railway.—Approves scheme, but objects to the following item:—

(*i*) Item No. B—in respect of its entire length—Baigachi to Keatara.

(6) Howrah-Amta and Howrah-Sheakhala Railways.—Object to the following items:—

(*i*) Item No. B—in respect of the length between Baigachi and Sheakhala.

(*ii*) Item No. E—in respect of the length between Sipahigachi and Champadanga.

The objections raised by these railways and any alternative proposals suggested by them are dealt with separately in Chapter XXXVII.

In order to make the report self-contained in respect of the important question relating to acceptance of, or objection to, the scheme by the several authorities concerned, and to place on record such documents as may be required for reference in dealing with this question at a later date, it has been considered desirable to attach copies of the correspondence on the subject with the various parties.

Copies of the correspondence with the Collector and the Chairman, District Board, which relate exclusively to this district, are given in Appendix XI to this chapter.

Copies of the correspondence with the Commissioner of the Burdwan Division, which relate to the six districts forming the division, are given in Appendix IX to Chapter XXXVII.

Copies of the correspondence with the railways, which relate to the entire area served by these lines, are given in Appendix IV to Chapter XXXVI.

In this district therefore unanimous acceptance by all parties concerned has been obtained only in respect of the undermentioned items, and to the extent noted against each :—

Items Nos. A, C, D, F, G, I, J, K, L, M, N, and O.—Entire lengths.

Item No. E.—Champadanga to Kirtichandrapur.

Item No. H.—Dadpur to Inchura.

XIV—Order of priority for construction.

The question of the order in which the roads selected to form the complete district scheme should be taken up for construction, has also been considered from the district point of view. The views of the Collector of the district and of the District Board on this subject were invited, and copies of the relevant correspondence are given in Appendix XI to this chapter. The order in which the district authorities place the items included in the scheme is shown below :—

Index letter.	Location.		Order of priority assigned by—	
	From—	To—	District Board.	Collector.
A	Bally ..	Debipur ..	I	The Collector agrees with the District Board.
B	Baigachhi ..	Keatara ..	II	
C	Paita ..	Khatul ..	III	
D	Surul-Chowmatha	Harihar ..	IV	
E	Sepahigachi ..	Kirtichandrapur	VII	
F	Chinsura ..	Bhandarhati ..	IX	
G	Bhandarhati ..	Champadanga ..	V	
H	Dadpur ..	Bakulia ..	VI	
I	Inchora ..	Balagarh ..	XI	
J	Serampore ..	Sitapur ..	VIII	
K	Uttarpara ..	Kalipur ..	....	
L	Joyrampur ..	Palaspai ..	X	
M	Rajhati ..	Kagnan ..	XII	
N	Arambagh ..	Badanganj ..	XIII	
O	Singur ..	Moshat ..	XIV	

APPENDICES TO CHAPTER XII.

Appendix I.

Hooghly.

List of subdivisions and thanas, showing area, population and density as per 1931 census.

Subdivisions and thanas.	Area.	Population.	Density per sq. mile.
1	2	3	4
	Sq. miles.	Number.	
I.—Sadar subdivision ..	*439*	*324,825*	*740*
1. Pandua	111	68,694	619
2. Dhaniakhali ..	104	73,886	710
3. Polba	110	66,150	601
4. Balagarh ..	78	46,362	594
5. Chinsura ..	12	40,832	3,403
6. Magra	24	28,901	1,204
II.—Serampore subdivision ..	*344*	*501,334*	*1,457*
1. Haripal	70	58,429	835
2. Tarakeswar ..	45	41,770	928
3. Jangipara ..	63	52,889	840
4. Serampore ..	21	67,804	3,229
5. Uttarpara ..	10	53,960	5,396
6. Bhadreswar ..	15	57,345	3,823
7. Singur	57	67,547	1,185
8. Chanditola ..	63	101,590	1,613
III.—Arambagh subdivision ..	*405*	*288,096*	*711*
1. Arambagh ..	113	70,069	620
2. Pursura ..	37	41,165	1,113
3. Goghat ..	145	78,380	541
4. Khanakul ..	110	98,482	895

Appendix II.

Hooghly.

Statement showing hâts and melas arranged roughly in order of importance.

PART I—HÂTS.

Index number on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
1	Chanditala ..	Chanditala ..	Bi-weekly ..	2,500
2	Tarakeswar ..	Tarakeswar ..	Daily ..	600
3	Bhadreswar ..	Bhadreswar ..	Ditto ..	500
4	Champadanga ..	Tarakeswar ..	Bi-weekly ..	1,000
5	Manirampur ..	Chanditala ..	Ditto ..	1,000
6	Krishtanagar ..	Khanakul ..	Ditto ..	800
7	Haripal ..	Haripal ..	Daily ..	300
8	Begumpurbazar ..	Chanditala ..	Ditto ..	300
9	Tajpur ..	Ditto ..	Ditto ..	300
10	Kayapat Badarganj ..	Goghat ..	Bi-weekly ..	700
11	Goralgacha ..	Chanditala ..	Daily ..	250
12	Kalipur ..	Ditto ..	Ditto ..	250
13	Bandipur ..	Haripal ..	Bi-weekly ..	600
14	Rajhati ..	Khanakul ..	Ditto ..	600
15	Borai ..	Singur ..	Daily ..	200
16	Borai ..	Ditto ..	Weekly ..	1,000
17	Khanakul ..	Khanakul ..	Bi-weekly ..	500
18	Batnal ..	Arambagh ..	Ditto ..	500
19	Boradangol ..	Ditto ..	Ditto ..	500
20	Kamarpukur (Sripur Hat).	Goghat ..	Ditto ..	500
21	Rajbalhat Debi's Temple	Ditto ..	Daily ..	200
22	Begumpur ..	Chanditala ..	Bi-weekly ..	500
23	Janai ..	Ditto ..	Daily ..	200
24	Bhagabatipur ..	Ditto ..	Ditto ..	200
25	Rashidpur ..	Jangipara ..	Ditto ..	175
26	Kamarkundu I Hat ..	Singur ..	Bi-weekly ..	400
27	Kamarkundu II Hat ..	Ditto ..	Ditto ..	400
28	Chanditala ..	Chanditala ..	Daily ..	150
29	Adan ..	Ditto ..	Ditto ..	150
30	Panchghara ..	Ditto ..	Ditto ..	150
31	Rajhati ..	Khanakul ..	Ditto ..	150
32	Nasibpur ..	Singur ..	Ditto ..	150
33	Kinkarbati ..	Haripal ..	Bi-weekly ..	350
34	Singur ..	Singur ..	Ditto ..	350
35	Gourhati ..	Arambagh ..	Ditto ..	350
36	Dwarhata ..	Haripal ..	Ditto ..	300
37	Kaikala ..	Ditto ..	Ditto ..	300
38	Basabati ..	Singur ..	Ditto ..	300
39	Jagatnagar ..	Ditto ..	Ditto ..	300
40	Thakuranichak ..	Khanakul ..	Ditto ..	300
41	Bandar ..	Ditto ..	Ditto ..	300
42	Raghunathpur ..	Uttarpara ..	Daily ..	125
43	Nawabpur ..	Chanditala ..	Ditto ..	100
44	Santoshpur ..	Tarakeswar ..	Bi-weekly ..	250
45	Mundalika ..	Goghat ..	Ditto ..	250
46	Sitapur ..	Ditto ..	Ditto ..	250
47	Mayapur Chati ..	Arambagh ..	Weekly ..	500
48	Keshabpur ..	Ditto ..	Bi-weekly ..	250
49	Dihibatpur ..	Pursura ..	Ditto ..	250
50	Sabalsingpur ..	Khanakul ..	Ditto ..	250
51	Udaypur ..	Ditto ..	Ditto ..	250

Index number on map.	Name of hât.	Thana in which located.	When held.	Daily attendance.
1	2	3	4	5
				Number of people.
52	Bandor	Khanakul	Daily	100
53	Krishtanagar	Ditto	Ditto	100
54	Atal	Singur	Bi-weekly	250
55	Gopedanda	Tarakeswar	Ditto	225
56	Kaichara	Haripal	Ditto	200
57	Bakchi	Ditto	Ditto	200
58	Malia Munshi	Ditto	Ditto	200
59	Mavokhana	Khanakul	Ditto	200
60	Helan	Ditto	Ditto	200
61	Bhangamora-Kushiganj	Pursura	Ditto	200
62	Purh	Arambagh	Ditto	200
63	Panta	Goghat	Ditto	200
64	Anur	Ditto	Ditto	200
65	Talpur	Tarakeswar	Ditto	200
66	Butibazar	Jangipara	Daily	75
67	Kayapat	Goghat	Ditto	70
68	Panchberia	Ditto	Bi-weekly	175
69	Dudkumra	Chanditala	Daily	65
70	Tejpur	Haripal	Bi-weekly	150
71	Khanakul	Khanakul	Daily	60
72	Duadana	Ditto	Bi-weekly	150
73	Herna	Ditto	Ditto	150
74	Ghorgohal	Pursura	Ditto	150
75	Srirampur	Ditto	Ditto	150
76	Goghat	Goghat	Ditto	150
77	Khatul	Ditto	Ditto	150
78	Haripur	Ditto	Ditto	150
79	Shyambazar	Ditto	Ditto	150
80	Furfura	Jangipara	Ditto	150
81	Furfura Tattalar	Ditto	Ditto	150
82	Gobarhara	Tarakeswar	Ditto	150
83	Haripur	Singur	....	200
84	Hat Basantpur	Arambagh	Daily	50
85	Shyambazar	Goghat	Ditto	50
86	Kumirmorah	Chanditala	Ditto	50
87	Molla Simla	Singur	Bi-weekly	112
88	Morapi	Haripal	Ditto	100
89	Bandipur	Khanakul	Ditto	100
90	Poll	Ditto	Ditto	100
91	Radhaballavpur	Ditto	Ditto	100
92	Digrui	Pursura	Ditto	100
93	Bajna	Goghat	Ditto	100
94	Balibazar	Ditto	Ditto	100
95	Prasadpur	Ditto	Daily	40
96	Krishtarampur	Chanditala	Bi-weekly	100
97	Manaharpur	Ditto	Daily	35
98	Tiral	Pursura	Bi-weekly	80
99	Sheakhala	Ditto	Ditto	75
100	Kistaganj	Goghat	Daily	30
101	Rajbalhat	Ditto	Bi-weekly	70
102	Mosat	Chanditala	Ditto	65
103	Chandanpur	Haripal	Ditto	63
104	Mandaram Gorar	Goghat	Daily	25
105	Kaliaraha	Singur	Bi-weekly	60
106	Kharial	Chanditala	Daily	23
107	Nandanpur	Khanakul	....	100
108	Khajnapur	Arambagh	Bi-weekly	50
109	Behala	Ditto	Ditto	50
110	Dari Nakundu	Goghat	Weekly	100
111	Satgara	Ditto	Bi-weekly	50
112	Ankutalya	Chanditala	....	100
113	Mayapurhat (Rasulpur)	Arambagh	Bi-weekly	Not known.

PART II—MEIAS.

Index number on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
1	Tarakeswar ..	Tarakeswar ..	Thrice a year ..	4	12,500
2	Batanal Rath ..	Arambagh ..	Bi-weekly for one month in June-July.	1	2,000
3	Tarakeswar ..	Tarakeswar ..	February ..	2	7,500
4	Rajbalhat ..	Goghat ..	Twice a year ..	1	2,500
5	Ghoshpur ..	Khanakul ..	February ..	4	1,000
6	Jarur ..	Ditto ..	15th April .	1	4 000
7	Marokhana ..	Ditto ..	February-March ..	1	4,000
8	Ranjit Roy's Dighi	Arambagh ..	March-April ..	1	4,000
9	Singjora .	Chanditala ..	..	7	500
10	Majerhat ..	Ditto ..	..	7	500
11	Chakrapur .	Ditto ..	October-November ..	3	1,000
12	Basubati ..	Singur ..	January-February ..	7	400
13	Kamarkundu	Ditto ..	October-November ..	7	400
14	Dewan Bura Tala	Haripal ..	15th January ..	1	2,500
15	Sastipur Rath ..	Arambagh ..	Bi-weekly for one month in June-July.	1	300
16	Kachgoria Rath	Ditto ..	Ditto ..	1	300
17	Kokond ..	Goghat ..	15th December and 15th March.	1	1,200
18	Badarganj .	Ditto ..	Ditto ..	1	1,200
19	Kayapat .	Ditto ..	Ditto ..	1	1,200
20	Raghubati ..	Arambagh ..	January-February ..	4	500
21	Janda .	Goghat ..	15th January ..	1	2,000
22	Pilkhani ..	Khanakul ..	February ..	4	400
23	Thakurani Chak	Ditto ..	September ..	3	500
24	Protapnagar ..	Arambagh ..	15th January ..	1	1,500
25	Krishtanagar ..	Khanakul ..	November-December	3	500
26	Kasipur ..	Jangipur ..	February-March ..	7	200
27	Khanakul ..	Khanakul ..	April-May ..	1	1,200
28	Pursura ..	Pursura ..	February ..	8	150
29	Bandipur ..	Khanakul ..	January ..	3	400
30	Tarahat ..	Goghat ..	Twelve times a year	1	100
31	Majdihi ..	Ditto ..	March-April ..	1	1,200
32	Haripal ..	Haripal ..	No fixed date ..	1	1,000
33	Khanakul ..	Khanakul ..	January-February ..	1	1,000
34	Ditto ..	Ditto ..	February-March ..	2	500
35	Goghat Rath ..	Goghat ..	September-October ..	2	500
36	Patahari ..	Khanakul ..	January ..	3	300
37	Puin Pirtala ..	Aramabgh ..	February ..	3	300
38	Rashjatra ..	Goghat ..	..	..	800
39	Tirolmar Mandeswari khal.	Arambagh ..	January ..	3	250
40	Protiharpur ..	Tarakeswar ..	June-July ..	1	750
41	Rashidpur Rathtala.	Jangipur ..	July ..	..	750
42	Nawabpur ..	Chanditala .	..	7	100
43	Khanakul ..	Khanakul ..	February-March ..	1	700
44	Ditto ..	Ditto ..	15th April ..	1	700
45	Radhaballavpur	Ditto ..	February ..	3	200
46	Natipur ..	Ditto ..	Ditto ..	3	200
47	Panpit ..	Arambagh ..	February-March ..	3	200
48	Debipukur ..	Ditto ..	January-February ..	3	200
49	Dhulapur ..	Goghat ..	December-January ..	3	200
50	Pirtala ..	Ditto ..	April-May ..	3	200
51	Maliajat ..	Haripal ..	January ..	3	200
52	Rampur ..	Jangipur ..	June-July ..	2	300
53	Haripal ..	Haripal ..	15th April ..	1	500
54	Rauthkhana ..	Khanakul ..	15th and 16th January	2	250
55	Musthadanga ..	Arambagh ..	July ..	1	500

Index number on map.	Name of mela.	Thana in which located.	Time when held.	Duration.	Daily attendance.
1	2	3	4	5	6
				Number of days.	Number of people.
56	Shikraghat ..	Goghat ..	15th January ..	1	500
57	Protiharpur ..	Tarakeswar ..	July .. .	1	500
58	Jangalpara ..	Chanditala ..	Twice a year ..	1	200
59	Khanakul ..	Khanakul ..	July	1	400
60	Shampur ..	Pursura ..	15th April ..	1	400
61	Rangamati ..	Goghat ..	Ditto ..	1	400
62	Digrui ..	Pursura ..	15th January ..	1	300
63	Mayapur Pirtala	Arambagh ..	April-May ..	1	300
64	Senpur	Jangipara ..	..	..	300
65	Natibpur ..	Khanakul ..	15th April ..	1	200
66	Ganeshpur ..	Ditto ..	Ditto .	1	200
67	Palaspai ..	Ditto	16th April ..	1	200
68	Routhkhana ..	Ditto ..	Ditto ..	1	200
69	Krishtapur Rath	Arambagh ..	July .. .	1	200
70	Protapnagar ..	Ditto ..	June-July ..	2	100
71	Shyambati ..	Goghat .	February ..	1	200
72	Rajbalhat Charak-tala.	Ditto ..	.. ..	1	200
73	Mukundpur ..	Chanditala ..	January-February ..	1	200
74	Naldaba ..	Goghat .	15th April ..	1	150
75	Nilarpur Charak	Jangipara .	April .. .	1	150
76	Ananta Rampur	Chanditala ..	February-March .	1	150
77	Ananta Charak ..	Ditto ..	March -April .	1	150
78	Dudkumra ..	Ditto ..	.. ..	..	100
79	Haripur Rath ..	Ditto ..	..	..	100

Important hâts not included in Part I as sufficient information was not available to permit arrangement in order of importance.

PART III—HÂTS.

Index No. on map.	Name of hât.	Thana in which located.	When held.
1	2	3	4
I ..	Sheoraphuli	Serampore ..	Bi-weekly.
II ..	Serampore	Ditto ..	Daily.
III ..	Magra Bazar	Magra ..	Ditto.
IV ..	Tribeni Bazar	Ditto ..	Ditto.
V ..	Mallik Kasem hat ..	Chinsurah ..	Bi-weekly.
VI ..	Bandel Bazar	Ditto ..	Daily.
VII ..	Pandua hat	Pandua ..	Bi-weekly.
VIII ..	Dhaniakhali	Dhaniakhali ..	Ditto.
IX ..	Khanpur	Ditto ..	Ditto.
X ..	Dasghara	Ditto ..	Ditto.
XI ..	Polba	Polba ..	Ditto.
XII ..	Somra Bazar	Balagarh ..	Daily.
XIII ..	Sripur market	Ditto ..	Ditto.
XIV ..	Jangipara	Jangipara ..	....
XV ..	Arambagh	Arambagh ..	Daily.

Appendix III.

Hooghly.

List of ferries arranged in order of importance with details of income, location and other particulars.

Index No.	Name of ferry.	Average annual income during 1930-35.	Road on which located.	Controlling authority of road.	Index No. of road.	Mile in which ferry is located.	Stream crossed.	Period for which ferry plies.	Depth of water during cold weather.	Width of river at ferry point.	Remarks.
1	2	3	4	5	6	7	8	9	10	11	12
		Rs.							Ft.	Ft.	
1	**Telinipara** ..	6,500	....	....	..	..	Hooghly ..	Whole year ..	..	2,600	
2	**Paltaghat** ..	6,000	....	....	..	..	Ditto ..	Ditto ..	..	2,600	
3	**Balarampur** ..	1,000	Old Benares ..	District Boad	31	42	Kana khal ..	July-October ..	3	200	
4	**Haraditya**	1,000	Ditto	Ditto ..	31	40	Kubley khal ..	July-September ..	..	50	
5	**Pursura** ..	450	Ditto ..	Ditto ..	31	34	Damodar ..	July-October ..	2	500	
6	**Harinkhola** ..	250	Ditto ..	Ditto ..	31	38	Mundeswari ..	July-December ..	2	650	
7	**Sodepur** ..	250	Ditto ..	Ditto ..	31	36	Sodepur khal ..	July-October ..	1	300	

Appendix IV.

Hooghly.

Statement showing particulars relating to railways within the district.

Serial No.	Name of railway.	Name of section.	Gauge.	Length within the district.	Number of of stations.	Approximate statistics for the year ending March 1936. Number of passengers coached.	Quantity of goods carried.	Gross receipts from all stations within the district.
1	2	3	4	5	6	7	8	9
			Ft. In.	Miles.	No.	No.	Tons.	Lakhs of rupees.
1	East Indian	Main line	5 6	40·25	21	10,157,474	779,917	38·58 (rows 1–5)
2	Ditto	Howrah-Burdwan Chord ..	5 6	29·75	12	586,604	30,014	
3	Ditto	Bandel-Berharwa Loop ..	5 6	22·75	7	1,539,331	49,681	
4	Ditto	Tarakeswar Branch	5 6	21·50	8	1,127,897	117,820	
5	Ditto	Bandel-Naihati ..	5 6	2·00	1	352,165	44	
6	Bengal Provincial ..	Tribeni-Tarakeswar ..	2 6	32·50	15	Information not available. (rows 6–9)		
7	Ditto	Dashghara-Jamalpurganj ..	2 6	1·50	2			
8	Howrah-Amta ..	Bargachi-Champadanga ..	2 0	13·50	2			
9	Ditto	Howrah-Sheakhala ..	2 0	10·75	3			
		Total	..	174·50	71	13,753,471	977,476	38·58

Area of country for each mile of railway—14·68 square miles.

Appendix V.

Hooghly.

List of roads in Hooghly district, including Government roads and district roads showing total length of each item and allocation of same under the classification given below :—

Class I—Metalled roads—
A—Bridged and drained throughout.
B—Partially bridged and drained.

Class II—Unmetalled roads—
A—Bridged and drained throughout.
B—Partially bridged and drained.

Class III—Roads of types inferior to I and II above.

NOTE.—Subdivisional roads, urban roads and village roads are not included in this list.

Index No.	Name of road.	From	To	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A.	B.	A.	B.		
1	2	3	4	5	6	7	8	9	10	11
	Government roads.									
1P	Grand Trunk	..	..	42·50	42·50	..	..	..	..	Excludes three miles within French Territory at Chandernagore.
2P	Link from Grand Trunk Road to Hooghly river at Dalhousie Jute Mill.	..	..	0·16	0·16	..	..	..	..	
			Total ..	42·66	42·66	..	..	..	..	

	District Board roads.								
1	Arambagh-Nasarai	Arambagh ..	Nasarai ..	6·12	1·92	..	4·20	..	..
2	Arambagh-Tetulmuri	Ditto ..	Tetulmuri ..	17·37	1·59	..	..	15·78	..
3	Baidyabati-Tarakeswar ..	Baidyabati ..	Tarakeswar ..	21·42	..	10·25	11·17	..	..
4	Balagarh-Bandel	Balagarh ..	Bandel ..	0·22	0·22	..	..	..	..
5	Balagarh Feeder	Balagarh railway station.	2nd mile of Somra-Dumurdaha Road.	0·81	0·81	..	..	..	..
6	Bhastara Feeder	Bhastara railway station.	9th mile Bainchi-Dasghara Road.	0·36	..	0·36	..	..	..
7	Bhadreswar-Nasibpur	Bhadreswar	Nasibpur ..	6·00	0·75	..	5·25	..	..
8	Bainchi-Baidyapur	Bainchi ..	Baidyapur ..	3·48	3·48	..	..	..	..
9	Bora-Kapasaria	Bora ..	Kapasaria ..	1·05	..	1·05	..	..	..
10	Bainchi-Dasghara	Bainchi ..	Dasghara ..	19·46	2·46	..	..	17·00	..
11	Bainchi-Bainchi Bazar	Ditto ..	Bainchi Bazar ..	2·75	2·00	..	..	0·75	..
12	Chandernagore-Bhola	Chandernagore ..	Bhola ..	12·02	2·00	..	..	10·02	..
13	Chanditola-Krishnarampore ..	Chandtitola ..	Krishnarampore	4·61	3·10	1·51	..	..	..
14	Chinsura Station	Tolafatak ..	1st mile Chinsura-Khanpur Road.	1·91	..	1·91	..	..	..
15	Chinsura-Khanpur	Chinsura ..	Khanpur ..	24·22	12·55	..	11·67	..	..
16	Chinamore-Palera	Chinamore ..	Palera ..	2·05	1·27	..	0·78	..	..
17	Dasghara-Hattola-Madhabpur ..	Dasghara-Hattola	Madhabpur ..	0·96	..	0·66	..	0·30	..
18	Haripal-Dhaniakhali	Haripal station ..	Dhaniakhali ..	9·83	6·25	..	..	3·58	..
19	Haripal-Jagjibanpur	Haripal railway station.	Jagjibanpur ..	3·34	..	1·43	..	1·91	..
20	Hooghly-Majnan	Hooghly ..	Majnan ..	18·69	3·94	..	14·75	..	..
21	Hooghly-Satgaon	Ditto ..	Satgaon ..	4·00	1·46	..	2·54	..	..
22	Janaibazar-Barasat	Janaibazar ..	Barasat ..	0·51	..	0·51	..	..	..
23	Rai Bijoy Narayan Kundu Bahadur	Khanyan ..	Halusai ..	4·00	2·16	..	..	1·84	..
24	Konnagore-Naity	Konnagore ..	Naity ..	5·87	1·25	..	4·62	..	..
25	Mogra-Khanpur	Mograganj ..	24th mile, Chinsura-Khanpur Road.	22·20	0·32	..	16·38	..	5·50
26	Mogra-Polba	Mogra ..	Polba ..	5·24	5·24	..	..	..	..
27	Mogra-Tribeni	Ditto ..	Tribeni ..	0·83	0·83	..	..	..	..
28	Mondlai-Jamgram	Mondlai ..	Jamgram ..	2·50	2·33	..	..	0·17	..
29	Nabagram-Charpur	Nabagram ..	Charpur ..	13·59	4·77	..	..	5·35	3·47
30	Nasibpur-Janai	Nasibpur ..	Janai ..	7·16	3·55	..	..	3·61	..
31	Old Benares	Debipur ..	Khatul ..	50·43	2·40	..	..	46·49	1·54
32	Pandua-Kalna	Pandua ..	Kalna ..	12·13	..	12·13	..	..	..
			Carried over ..	285·13	66·65	29·81	71·36	106·80	10·51

Index No.	Name of road.	From	To	Total length in miles.	Details.					Remarks.
					Class I.		Class II.		Class III.	
					A.	B.	A.	B.		
1	2	3	4	5	6	7	8	9	10	11
			Brought forward	285·13	66·65	29·81	71·36	106·80	10·51	
33	Pandua Station	Mile 42 of Grand Trunk Road.	Pandua thana ..	0·88	..	0·88	..	..	..	
34	Trishbigha-Bansberia	Mile 31 of Grand Trunk Road.	Bansberia municipal limit.	1·45	1·45	..	..	..	..	
35	Tarakeswar-Jamdara	Tarakeswar ..	Jamdara ..	6·00	..	2·00	..	4·00	..	
36	Utterpara-Kalipur	Utterpara railway station.	Mile 10 of Old Benares Road.	4·40	4·40	..	..	..	..	
37	Atti-Ranagori	Mile 45 of Grand Trunk Road.	Ranagori ..	1·08	..	..	1·08	..	..	
38	Barolganj-Sultangachha ..	Mile 2 of Mogra-Polba Road.	Mile 2 of Mogra-Khanpur Road.	0·87	..	..	..	0·87	..	
39	Belmuri Feeder	Belmuri railway station.	16th mile, Chinsura-Khanpur Road.	1·30	..	..	..	1·30	..	
40	Bainchi-Bilsora	Mile 49, Grand Trunk Road.	Bilsora ..	3·59	..	..	3·59	..	..	
41	Durgapur-Cheragram	Mile 9, Bainchi-Dasghara Road.	Cheragram ..	1·37	..	..	..	1·37	..	
42	Inchura-Somra	Inchura ..	Somra ..	3·00	..	..	3·00	..	..	
43	Itachona-Morshit	Itachona ..	Morshit ..	2·54	..	..	..	2·54	..	
44	Jeerat-Dwarpara	Jeerat ..	Dwarpara ..	3·69	..	..	..	3·69	..	
45	Khanyan-Sikra	Khanyan ..	Sikra ..	3·75	..	..	..	3·75	..	
46	Khanyan-Ilsoba	Ditto ..	Ilsoba ..	3·30	..	..	2·75	..	0·55	
47	Mogra-Nasarai	Mogra ..	Nasarai ..	4·15	..	..	4·15	..	..	
48	Naksa-Digusi	Naksa ..	Digusi ..	3·00	..	..	3·00	..	..	
49	Pandua-Kalyanpur	Pandua ..	Kalyanpur ..	7·87	..	..	..	2·50	5·37	
50	Pandua-Kulti	Ditto ..	Kulti ..	4·42	..	..	4·42	..	..	
52	Ramnathpur-Horal	Ramnathpur ..	Horal ..	9·32	..	..	..	9·32	..	
53	Sheya-Alasin	Sheya ..	Alasin ..	9·00	..	..	5·00	..	4·00	
54	Somra-Digra	Somra ..	Digra ..	3·00	..	..	..	3·00	..	
55	Somra-Dumurdah ..	Ditto ..	Dumurdah ..	10·00	..	..	10·00	..	..	
56	Tinna-Sandua	Tinna ..	Sandua ..	2·42	..	..	..	2·42	..	
57	Triveni-Guptipara	Tribeni ..	Guptipara ..	16·58	..	..	16·58	..	..	

58	Toregram-Magura	Toregram ..	Magura ..	1·09	..	..	..	1·09	..
59	Autpur-Sitapur	Autpur ..	Sitapur ..	7·71	..	..	7·71	..	..
60	Bandipur-Tentulpukur	Bandipur ..	Tentulpukur ..	4·47	..	..	..	4·47	..
61	Bonderbill-Mrigella	Bonderbill ..	Mrigella ..	0·60	..	..	0·60	..	..
62	Chanditola-Ekloki	Chanditola ..	Ekloki ..	3·00	..	..	3·00	..	..
63	Chinamore-Nanda	Chinamore ..	Nanda ..	3·00	..	..	..	3·00	..
64	Dirghangu-Singur ..	Dirghangu ..	Singur ..	6·64	..	..	..	6·64	..
66	Gangadharpur-Nawabpur ..	Gangadharpur	Nawabpur ..	8·00	..	..	..	6·00	2·00
67	Gaja-Rajabalhat	Gaja ..	Rajabalhat ..	7·00	..	..	7·00	..	..
69	Gobra-Chanditola	Gobra ..	Chanditola ..	0·94	..	..	0·94	..	..
70	Haripal-Nalikul	Haripal ..	Nalikul ..	4·20	..	..	..	4·20	..
71	Harananda-Dilakash	Harananda ..	Dilakhash ..	8·36	..	..	8·36	..	..
72	Kalachora-Bhagabatipur ..	Kalachora ..	Bhagabatipur ..	3·80	..	..	..	3·80	..
74	Mosat-Dhitpur	Mosat ..	Dhitpur ..	6·00	..	..	6·00	..	..
77	Rahimpur-Jangipara	Rahimpur ..	Jangipara ..	2·76	..	..	2·76	..	..
78	Rashpur-Prasadpur	Rashpur ..	Prasadpur ..	2·24	..	..	..	2·24	..
79	Serampore-Dankuni	Serampore ..	Dankuni ..	4·67	..	..	4·67	..	..
80	Singur-Mosat	Singur ..	Mosat ..	6·82	..	..	..	6·82	..
81	Sitapurhat Feeder	....	....	0·29	..	..	..	0·29	..
82	Tarkeswar-Champadanga ..	Tarkeswar ..	Champadanga ..	4·46	..	..	4·46	..	..
83	Tarakeswar-Bhimpur	Ditto ..	Bhimpur ..	1·00	..	..	..	1·00	..
84	Arambagh-Arandi	Arambagh ..	Arandi ..	6·52	..	..	..	6·52	..
85	Arambagh-Bondar	Ditto ..	Bondar in the river	14·25	..	..	..	14·25	..
86	Arambagh-Tirole	Ditto ..	Tirole ..	5·00	..	..	..	5·00	..
87	Arambagh-Udrajpur	Ditto ..	Udrajpur ..	8·00	..	..	..	6·00	2·00
88	Badanganj-Krishnaganj	Badanganj ..	Krishnaganj ..	1·25	..	..	1·25	..	..
89	Bhikdas-Bali	Bhikdas ..	Bali ..	6·25	..	..	..	6·25	..
91	Hazipur-Ramjibanpur	Hazipur ..	Ramjibanpur ..	1·12	..	..	1·12	..	..
94	Subirchak-Badanganj	Subirchak ..	Badanganj ..	7·00	..	..	..	7·00	..
95	Uchalon-Mandali	Uchalon ..	Mandali ..	15·12	..	..	..	15·12	..
51	Puinan-Dwarbasini	Puinan ..	Dwarbasini ..	4·11	..	..	..	..	4·11
65	Dipa-Bolgori ..	Dipa ..	Bolgori ..	6·15	..	..	..	..	6·15
68	Gobarhara-Adangachi	Gobarhara ..	Adangachi	2·91	..	..	..	..	2·91
73	Kalipur-Krishnapur	Kalipur ..	Krishnapur ..	0·94	..	..	..	..	0·94
90	Goghat-Kumerganj	Goghat ..	Kumerganj ..	7·25	..	..	..	..	7·25
75	Prasadpur Feeder	..	....	0·22	..	..	..	..	0·22
76	Rajbalhat-Poshpur ..	Rajbalhat ..	Poshpur ..	5·61	..	..	..	..	5·61
92	Kamarpukur Baghabati Khan's Dighi	..	....	5·06	..	..	..	..	5·06
93	Mayapur-Jagatpur	Mayapur ..	Jagatpur ..	16·25	..	..	..	..	16·25
	Total ..	..	..	589·17	72·50	32·69	172·80	238·25	72·93

Appendix

HOOGH-

Statement making an analysis of waterway on

Serial No.	Index No.	Name of roads and section of railways	Miles.	A Existing bridges. 1 Up to 5'. No	R. ft.	2 Above 5' up to 10'. No	R. ft.	3 Total A_1+A_2. No.	R. ft	4 Average per mile. No.	R. ft.
		Railways									
1		Howrah Delhi ..	40 3	46	150	39	322	85	472	2 1	11 8
2		Howrah Burdwan Chord ..	29 8	72	253	19	334	121	587	4 1	19 7
3		Howrah Tarakeswar Branch Line	21 5	62	181	7	69	69	250	3 2	11 6
4		Bandel-Barharwa	22 8	35	90	16	138	51	237	2 2	10 4
		Total ..	114 4	215	683	111	863	326	1,546	2 9	13·5
		Government roads -									
5		Grand Trunk	42 5	15	50	13	93	28	143	0 7	3 4
		Total ..	42 5	15	50	13	93	28	143	0 7	3 4
		District roads—									
6	2	Arambagh-Tentulmuri ..	17 4	28	65	2	16	30	81	1·7	4 6
7	3	Baidyabati Tarakeswar ..	21 4	40	100	6	37	46	137	2·1	6 4
8	10	Boinchee Dasghara ..	19 5	45	93	6	48	51	141	2 6	7 2
9	13	Chanditala Kristorampur .	4 6	15	25	1	5	16	30	3 5	6 6
10	15	Chinsurah Khanpur .	24 2	54	128	9	72	63	200	2 6	8·3
11	17	Dasghara-Hattola Madhabpur ..	1 0	1	2	..	..	1	2	1 0	2 0
12	18	Haripal Station to Dhanlakhali	9 8	23	43	3	27	26	70	2 6	7 1
13	19	Haripal Jagjibanpur ..	3 3	6	19	2	16	8	35	2·4	10 6
14	20	Hooghly Majnan ..	18 7	56	105	5	83	61	188	3·3	7 4
15	21	Hooghly-Satgaon . ..	4 0	2	3	..	..	2	3	0·5	0·7
16	23	Rai Bijoy Narayan Kundu Bahadur	4 0	3	5	2	15	5	20	1·2	5·1
17	24	Konnagore-Nalty ..	5 9	13	34	1	6	14	40	2 4	6·8
18	25	Mogra-Khanpur ..	22 2	40	80	6	45	46	125	2·1	5 6
19	30	Nasibpur-Janai	7 1	14	22	..	..	14	22	1·9	3 1
20	31	Old Benares, Khatul ..	50 4	62	183	14	108	76	291	1 5	5·8
21	35	Tarakeswar-Jamdara ..	6 0	15	27	2	15	17	42	2 8	7·1
22	37	Atti Ranagori . ..	1 1	9	13	..	..	9	13	0·8	12·5
23	38	Baroiganj-Sultangacha ..	0 9	2	6	1	8	3	14	3·5	15 9
24	39	Belmuri Feeder	1·3	4	9	..	..	4	9	3·1	6·9
25	40	Boinchee-Bilsora ..	3 6	3	8	3	22	6	30	1·7	8·5
26	41	Durgapore-Cheragram ..	1 4	7	11	..	..	7	11	5·1	8·0
27	42	Inchura-Somra	3 0	12	28	1	5	13	33	4·2	11·2
28	43	Itachona-Marshit	2 5	12	15	..	..	12	15	4·7	5·9
29	44	Jurat-Duarpara	3 7	13	25	..	..	13	25	3·5	6·7
30	45	Khanyan-Sikra	3 7	8	16	..	..	8	16	2·1	4·4
31	46	Khanyan-Ilsoba ..	3·3	9	16	..	..	9	16	2·7	4·9
32	47	Mogra-Nasarai	4·1	7	13	..	..	7	13	1·7	3·1
33	48	Naksa-Digsui	3 0	7	13	1	7	8	20	2·6	6·6
34	49	Pandua-Kalyanpur ..	7 9	18	32	2	17	20	49	2·5	6·2
35	50	Pandua-Kulti . ..	4·4	8	21	..	..	8	21	1·8	4·7
36	52	Ramnathpur-Horal ..	9·3	25	37	1	8	26	45	2 7	4·8
37	53	Sheya-Alasin	9·0	25	41	..	..	25	41	2·8	4·5
38	54	Somra-Digra	3·0	10	14	..	..	10	14	3·3	4·6
39	55	Somra-Dumurdah ..	10 0	45	77	..	..	45	77	4·5	7·7
		Carried over ..	294·7	641	1,329	68	510	709	1,839	..	..

VI.

LY.

railways and roads according to length of opening.

B Existing bridges.												A+B. Existing bridges.				C Existing bridges.			Total $A_s + B_s + C$.
1		2		3		4		5		6									
Above 10′ up to 25′.		Above 25′ up to 50′.		Above 50′ up to 75′.		Above 75′ up to 100′.		Total B(1+2+3+4).		Average per mile.		Total $A_s + B_s$.		Average per mile $A_s + B_s$.		Above 100′ up to 300′.		Above 300′.	
No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	R. ft.	R. ft.
31	468	10	427	5	286	9	802	55	1,983	1·4	40·6	140	2,455	3·5	61·1	12	2,254	848	5,557
36	538	5	184	4	240	3	264	48	1,226	1·6	41·2	169	1,813	5 7	60·9	1	120	..	1.933
8	155	1	40	2	114	..	..	11	309	0·5	14·4	80	550	3·7	26·0	..	..	..	559
2	32	2	90	1	75	..	..	5	197	0·2	8·6	56	434	2 4	19·0	3	600	..	1,034
77	1,193	18	741	12	715	12	1,066	119	3,715	1·0	32·5	445	5,261	3·9	40·0	16	2,971	848	9,083
9	116	2	68	..	..	..	..	11	184	0·3	4·3	39	327	1 0	7·7	2	260	..	587
9	116	2	68	..	..	..	..	11	184	0·3	4·3	39	327	1 0	7 7	2	260	..	587
1	20	..	..	..	..	..	..	1	20	0·1	1 2	31	101	1·8	5·8	..	..	..	101
3	57	2	83	..	..	..	..	5	140	0·2	6·5	51	277	2 3	12 9	..	..	..	277
1	18	..	..	2	120	..	..	3	138	0·1	7·1	54	279	2·7	11 3	..	..	..	279
..	..	..	..	..	..	..	..	..	..	..	..	16	30	3·5	6·6	..	..	..	30
6	75	..	..	1	72	1	99	8	246	0 3	10·2	71	446	2 9	18·5	1	107	..	553
..	..	..	..	..	..	..	..	..	..	..	..	1	2	1·0	2·0	..	..	..	2
7	120	..	..	..	..	..	..	7	120	0·7	12·4	33	190	3·3	19·5	..	..	..	190
2	36	..	..	..	..	..	..	2	36	0·6	10·7	10	71	3 0	21·3	..	..	..	71
2	42	1	40	..	..	1	83	4	165	0·2	8·8	65	303	3·5	16 2	..	..	..	308
..	..	..	..	..	..	..	..	..	..	..	..	2	3	0·5	0·7	..	..	..	3
..	..	..	..	1	60	..	..	1	60	0·2	15·0	6	80	0·5	20·1	..	..	..	80
2	32	2	73	..	..	..	..	4	105	0·7	17·9	18	145	3·0	24·7	..	..	..	145
2	36	2	70	..	..	..	..	4	106	0·2	4·8	50	231	2·2	10 4	..	..	..	231
..	..	..	..	..	..	..	..	..	..	..	..	14	22	1·9	3·1	..	..	..	22
4	57	8	248	1	52	1	84	14	441	0·3	8·8	90	732	1·8	14·6	..	..	..	782
1	20	..	..	..	..	..	..	1	20	0·2	3·3	18	62	3·0	10·4	..	..	..	62
..	..	..	..	..	..	..	..	..	..	..	..	9	13	0·8	12·5	..	..	..	13
..	..	..	..	..	..	..	..	..	..	...	..	8	14	3·5	15·9	..	..	..	14
..	..	..	..	..	..	..	..	..	..	..	..	4	9	3·1	6 9	..	..	..	9
..	..	..	..	..	..	..	..	..	..	..	..	6	30	1·7	8·5	..	..	..	30
2	31	..	..	..	..	..	..	2	31	1·4	2·3	9	42	6·5	10·3	..	..	..	42
..	..	..	..	..	..	..	..	..	..	..	..	13	33	4·2	11·2	..	..	..	33
..	..	..	..	..	..	..	..	..	..	..	..	12	15	4·7	5·9	..	..	..	15
1	21	..	..	..	..	..	..	1	21	0·3	5·7	14	46	3·8	12·4	..	..	..	46
..	..	..	..	..	..	..	..	..	..	..	..	8	16	2·1	4·4	..	..	..	16
..	..	..	..	..	..	..	..	..	..	..	..	9	16	2·7	4·9	..	..	..	16
1	14	..	..	..	..	..	..	1	14	0·2	3·4	8	27	1·9	6·5	..	..	..	27
..	..	..	..	..	..	..	..	..	..	..	..	8	20	2·6	6·6	..	..	..	20
..	..	1	34	..	..	..	..	1	34	0·1	4·3	21	83	2·7	10·5	..	..	..	83
..	..	..	..	..	..	..	..	..	..	..	..	8	21	1 8	4·7	..	..	..	21
..	..	1	36	..	..	..	..	1	36	0·1	3·9	27	81	2·8	8·7	..	..	..	81
1	22	..	..	..	..	..	..	1	22	0·1	2·4	26	68	3·0	6·9	..	..	..	68
..	..	..	..	..	..	..	..	..	..	..	..	10	14	3·3	4·6	..	..	..	14
1	15	..	..	..	..	..	..	1	15	0·1	1·5	46	92	9·6	9·2	..	..	..	92
37	616	17	586	5	304	3	266	68	1,770	..	..	771	3,609	..	..	1	107	..	3,716

Serial No	Index No	Name of roads and section of rail ways	Miles	A Existing bridges							
				1		2		3		4	
				Up to 5'.		Above 5' up to 10'		Total A_1+A_2		Average per mile.	
				No	R ft	No	R ft	No	R ft	No	R. ft.
		Brought forward District roads	391 7	641	1 329	68	510	709	1,839	.	..
40	56	Tinna Sandua	2 4	6	6		.	6	6	2 5	2 5
41	57	Tribeni Guptipara	16 6	12	42			12	42	0 7	2 5
42	58	Toregram Magura	1 1	7	8		..	7	8	6 5	7 8
43	59	Antpur Sitapur .	7 7	21	56	3	22	27	78	3 5	10 1
44	61	Bonderhill Mrigella	0 6	3	12	1	9	4	21	6 7	31 6
45	66	Gangadharpur Nawabpur	8 0	20	52	3	22	23	74	2 9	9 2
46	67	Gaja Rajbalhat	7 0	7	19	1	6	8	25	1 1	3 6
47	69	Chobra Chanditala	0 9	3	5			3	5	3 3	6 0
48	70	Haripal Nalikul .	1 2	13	37	1	6	14	43	3 3	10 3
49	71	Hara Nanda Dilakash	8 1	6	12	2	30	8	42	0 9	5 0
50	72	Kalachora Bhagabatipur	3 0	10	28	2	20	12	48	3 1	12 3
51	74	Mesat Dhitpur	6 0	18	48	2	16	20	64	3 3	10 7
52	77	Rahimpur Jangipara	2 8	9	25		..	9	25	3 2	9 0
53	78	Rashpur Prosadpur	2 2	9	24	3	22	12	46	5 4	20 1
54	79	Serampur Dankuni	4 7	10	30	2	12	12	42	2 5	9 0
55	82	Tarakeswar Champadanga	4 5	13	37			13	37	2 9	8 4
56	83	Tarakeswar Bhimpur	1 0	4	9			4	9	4 0	9 0
57	84	Arambagh Arandi	6 5	32	54	1	7	33	61	5 0	9 3
58	86	Arambagh Tiroli	5 0	9	17	.	..	9	17	1 8	3 4
59	87	Arambagh Udrajpur	8 0	14	27	4	32	18	59	2 2	7 3
60	88	Badanganj Kristoganj	1 2	9	21			9	21	7 2	17 2
61	89	Bhikdas Bali	6 2	12	19			12	19	1 9	3 1
62	91	Hazipur Ramjibanpur	1 1			1	8	1	8	0 9	0 9
63	94	Sultanchak Badanganj	7 0	29	56		.	29	56	4 1	8 0
64	95	Uchalon Mandali	15 1	29	62		.	29	62	1 9	4 1
65	51	Taman Dwarbasini	4 1	17	23	1	10	18	33	4 4	8 0
66	6	Dipa Balgori	6 1	9	16	1	6	10	22	0 2	3 6
67	68	Golathara Adamgachi	2 9	2	4	..	..	2	4	0 7	1 4
68	73	Kalipur Kristopur	0 9	4	4	..	..	4	4	0 4	0 4
69	75	Prosadpur Feeder	0 2	1	5	..	..	1	5	4·3	21 8
70	76	Rajbalhat Poshpur	5 5	9	21	1	6	10	27	1·8	4 9
71	90	Goghat Kumarganj	7 2	14	29	1	6	15	35	2 1	5 5
72	92	Kamarpukur Bhagabati Khan's Dighi	5 1	12	18	..	..	12	18	2·4	3 6
73	93	Mayapur Jagatpur .	16 2	39	95	1	10	40	105	2 5	6 4
		Total	475 0	1,056	2,250	99	700	1,155	3,010	2·4	6 3
		Grand Total ..	631 9	1,286	2,983	223	1,716	1,509	4,699	2 4	7·4

B Existing bridges.												A + B. Existing bridges.				C Existing bridges.			Total $A_1 + B_1 + C$.
1 Above 10′ up to 25′.		2 Above 25′ up to 50′.		3 Above 50′ up to 75′.		4 Above 75′ up to 100′.		5 Total B(1+2+3+4).		6 Average per mile.		Total $A_5 + B_5$.		Average per mile $A_6 + B_6$.		Above 100′ up to 300′.		Above 300′.	
No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	No.	R. ft.	R. ft.	R. ft.
37	616	17	584	5	304	3	206	62	1,770	..	..	771	3,609	..	..	1	107	..	3,716
..	..	..	..	..	..	..	..	..	..	..	..	6	6	2·5	2·5	..	..	..	6
..	..	..	..	..	..	..	..	..	..	..	..	12	42	0·7	2·5	..	..	..	42
..	..	..	..	..	..	..	..	..	..	..	..	7	8	6·5	7·8	..	..	.	8
..	..	..	..	..	..	..	..	..	..	..	..	27	78	3·5	10·1	..	..	..	78
1	16	..	..	..	..	..	..	1	16	1·7	27·2	5	37	8·4	58·8	..	..	..	37
..	..	1	29	..	..	..	..	1	29	0·1	3·7	24	103	3·0	13·9	..	..	..	103
..	..	1	32	2	132	..	..	3	164	0·4	23·5	11	189	1·5	27·1	..	..	..	109
..	..	1	50	..	..	..	..	1	50	1·1	5·5	4	55	4·1	11·5	..	..	..	55
..	..	..	..	..	..	..	..	..	..	..	..	14	43	3·3	10·3	..	..	..	43
..	..	..	..	..	..	1	85	1	85	0·1	10·2	9	127	1·0	15·2	..	..	.	127
..	..	1	26	2	150	..	..	3	176	0·8	44·9	15	224	3·8	57·2	..	..	.	224
3	39	..	..	..	..	..	..	3	39	0·5	6·6	23	103	3·8	17·3	..	..	..	103
1	19	1	40	..	..	..	..	2	59	0·7	31·2	11	81	4·0	30·2	1	100	..	184
..	..	..	..	..	..	1	90	1	90	0·4	40·6	13	136	5·8	61·2	..	.	..	136
2	42	..	..	..	..	..	..	2	42	0·4	9·1	14	84	2·9	18·1	..	..	..	84
..	..	1	40	..	..	..	..	1	40	0·2	9·0	14	77	3·1	17·4	..	..	..	77
..	..	..	..	..	..	..	..	..	..	..	..	4	9	4·0	9·0	..	..	..	9
..	..	..	..	..	..	..	..	..	..	..	..	33	61	5·0	9·3	..	..	..	61
..	..	..	..	..	..	..	..	..	..	..	..	9	17	1·8	3·4	..	..	.	17
1	16	..	..	..	..	..	..	1	16	0·1	2·0	19	75	2·4	9·3	..	..	..	75
..	..	..	..	..	..	..	..	..	..	..	..	9	21	7·2	17·2	..	..	..	21
..	..	..	..	..	..	..	..	..	..	..	..	12	19	1·9	3·1	..	..	..	19
..	..	..	..	..	..	..	..	..	..	..	..	1	8	0·9	0·7	..	..	..	8
..	..	..	..	..	..	..	..	..	..	..	..	20	56	4·1	8·0	..	..	..	56
..	..	..	..	..	..	..	..	..	..	..	..	29	62	1·9	4·1	..	..	..	62
..	..	..	..	..	..	..	..	..	..	..	..	18	33	4·4	8·0	..	..	..	33
..	..	..	..	..	..	..	..	..	..	..	..	10	22	0·2	3·6	..	..	..	22
..	..	..	..	..	..	..	..	..	..	..	..	2	4	0·7	1·4	..	..	..	4
..	..	..	..	..	..	..	..	..	..	..	..	4	4	0·4	0·4	..	..	..	4
..	..	..	..	..	..	..	..	..	..	..	..	1	5	4·3	21·8	..	..	..	5
1	15	..	..	..	..	..	..	1	15	0·2	2·7	11	42	2·0	7·6	..	..	..	42
1	20	..	..	..	..	..	..	1	20	0·1	2·8	16	55	2·2	8·3	..	..	..	55
..	..	..	..	..	..	..	..	..	..	..	..	12	18	2·4	3·6	..	..	..	18
1	20	..	..	..	..	..	..	1	20	0·1	1·2	41	125	2·6	7·6	..	..	..	125
48	803	23	801	9	586	5	441	85	2,631	0·2	5·6	1,240	5,641	2·6	11·9	2	207	..	5,848
134	2,112	48	1,010	21	1,301	17	1,507	215	6,530	0·3	10·3	1,721	11,229	2·7	17·7	20	3,141	818	15,518

Appendix VII.

Traffic Census in Hooghly District.

(1) Location of observation—15th mile (Serampore).
(2) Index No. and name of road—No. 1P. Grand Trunk Road.
(3) Supervising officer—L. N. Chatterjee, Sub-Divisional Officer, Public Works Department, Hooghly.
(4) Nature of road surface—Stone metalled, painted and grouted.
(5) Full width and metalled width of road—18′ 0″ and 18′ 0″.
(6) Average weight in tons of all traffic in 24 hours—1,022·95 tons.

Day—6 a.m. to 6 p.m. Night—6 p.m. to 6 a.m.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
26th October	87	19	42	7	123	38	163	55	10	1	18	9	34	3	11	3	642	248	3,491	1,645	358	43
27th October	65	25	44	13	119	43	121	61	3	1	3	2	45	1	13	..	699	233	4,322	1,394	158	14
28th October	64	33	36	13	92	39	129	56	..	1	16	4	33	1	13	..	857	188	3,346	1,256	536	4
29th October	40	37	19	14	99	43	120	51	6	2	11	4	29	4	23	2	663	229	3,663	1,591	273	15
30th October	65	36	33	17	96	30	144	57	4	1	18	5	36	3	16	6	699	298	3,880	2,296	296	23
31st October	61	33	31	9	107	31	107	76	6	3	15	3	37	2	24	2	733	251	3,852	2,316	314	8
1st November	61	15	19	6	105	36	169	95	11	1	14	14	30	2	20	..	800	349	4,080	2,156	232	10
Total ..	443	198	224	79	741	260	953	451	40	10	95	41	244	16	120	13	5,093	1,796	26,634	12,654	2,167	117
Total—Day and night ..	641		303		1,001		1,404		50		136		260		133		6,889		39,288		2,284	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	2,243·50 tons		303·00 tons		2,502·50 tons		1,053·00 tons		10·00 tons		40·80 tons		286·00 tons		33·25 tons		688·90 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	6,112·00
Average weight per day of 24 hours	.. ..	873·10
Weight per foot width of metalled track	.. ..	48·50

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,048·95
Average weight per day of 24 hours	.. ..	149·85
Weight per foot width of metalled track	.. ..	8·32

Total weight of all traffic in seven days—7,160·95 tons.

(1) Location of observation—15th mile.

(2) Index No. and name of road—No. 1P. Grand Trunk Road.

(3) Supervising officer—Babu P. N. Sen Gupta.

(4) Nature of road surface—Painted over water bound macadam.

(5) Full width and metalled width of road—18′ 0″ and 18′ 0″.

(6) Average weight in tons of all traffic in 24 hours—1,209·09 tons.

Date.	Motor traffic.												Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February ..	47	37	38	10	108	45	161	114	2	2	19	8	16	..	17	..	324	169	2,972	1,490	65	53
23rd February ..	72	66	56	25	97	37	186	75	12	..	12	4	21	2	24	4	685	201	3,990	1,292	255	51
24th February ..	70	59	30	18	102	60	115	97	4	4	20	9	29	5	31	..	590	277	2,976	1,920	281	64
25th February ..	79	64	41	33	103	50	142	61	5	3	9	9	40	5	45	10	690	334	4,905	2,306	334	51
26th February ..	75	27	37	27	101	33	133	63	7	..	20	8	27	8	29	15	719	87	3,496	1,045	287	57
27th February ..	67	69	44	21	110	67	170	145	5	3	11	2	18	3	17	..	563	184	3,401	1,694	108	46
28th February ..	39	64	36	27	136	63	219	121	7	4	17	5	29	3	29	3	822	281	4,542	1,736	519	54
Total ..	449	386	282	161	757	355	1,126	676	42	16	108	45	180	26	192	32	4,333	1,533	26,282	11,483	1,849	376
Total—Day and night ..	835		443		1,112		1,802		58		153		206		224		5,866		37,765		2,225	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	2,922·50 tons		443·00 tons		2,780 tons		1,351·50 tons		11·60 tons		45·90 tons		266·60 tons		56·00 tons		586·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	..	7,508·60
Average weight per day of 24 hours	..	1,072·65
Weight per foot width of metalled track	..	59·03

Non-motor traffic:

		Tons.
Total weight in seven days	..	955·10
Average weight per day of 24 hours	..	136·44
Weight per foot width of metalled track	..	7·58

Total weight of all traffic in seven days—8,463·70 tons.

(1) Location of observation—Mile 27·25, Hooghly, Bally.

(2) Index No. and name of road—No. 1P. Grand Trunk Road.

(3) Supervising officer—D. N. Banerjee, Overseer.

(4) Nature of road surface—Stone metalled and painted.

(5) Full width and metalled width of road—35′ 0″ and 18′ 0″.

(6) Average weight in tons of all traffic in 24 hours—579·43 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
26th October	15	7	9	..	48	11	107	25	1	2	51	23	22	1	12	..	599	126	1,058	501	74	8
27th October	13	14	8	6	42	8	70	29	5	1	37	14	15	13	12	3	870	232	1,281	557	96	..
28th October	20	11	14	4	42	12	104	42	..	..	33	23	25	94	13	1	692	215	1,255	469	62	..
29th October	25	16	9	2	45	11	86	16	2	..	31	16	44	3	47	32	937	298	1,356	391	95	..
30th October	21	19	7	6	40	8	87	24	6	1	36	17	21	4	12	31	817	167	1,067	275	82	..
31st October	25	45	10	4	37	12	68	29	4	1	49	7	20	145	11	2	919	281	1,204	447	39	..
1st November	30	10	9	2	42	11	139	48	4	1	39	30	50	5	40	1	1,090	253	1,440	294	61	7
Total ..	149	122	66	24	296	73	661	213	22	6	276	130	197	265	147	70	5,924	1,572	8,661	2,934	509	15
Total—Day and night ..	271		90		369		874		28		406		462		217		7,496		11,595		524	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1 1 tons		At ·25 ton		At ·1 ton					
	948·50 tons		90·00 tons		922·50 tons		655·50 tons		5·60 tons		121·80 tons		508·20 tons		54·25 tons		749·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	2,622·10
Average weight per day of 24 hours	.. ..	374·60
Weight per foot width of metalled track	.. ..	20·81

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	1,433·85
Average weight per day of 24 hours	.. ..	204·83
Weight per foot width of metalled track	.. ..	11·38

Total weight of all traffic in seven days—4,055·95 tons.

(1) Location of observation—28th mile.

(2) Index No. and name of road—No. 1P. Grand Trunk Road.

(3) Supervising officer—Babu D. N. Banerjee.

(4) Nature of road surface—Stone metalled, painted over water bound macadam.

(5) Full width and metalled width of road—40′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—759 ·96 tons.

Date.	Motor traffic.										Non-motor traffic.										Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February	19	33	11	8	42	4	75	37	..	2	96	39	22	6	7	6	319	158	816	311	9	2
23rd February	44	38	24	7	42	10	97	63	3	1	113	37	46	11	6	5	896	329	1,405	427	382	7
24th February	43	34	19	9	39	17	75	48	3	1	116	30	34	84	24	5	1,288	310	1,818	571	122	2
25th February	36	38	17	15	45	11	89	36	1	..	97	41	114	19	32	6	929	294	1,390	522	236	..
26th February	39	25	21	11	44	12	67	30	2	..	95	33	41	10	18	6	1,250	228	1,715	523	135	2
27th February	33	40	9	7	56	18	56	37	..	..	80	54	41	64	27	8	1,200	255	2,016	429	555	2
28th February	17	7	28	3	57	14	97	31	5	1	105	66	102	7	68	3	1,161	313	2,217	461	269	102
Total ..	231	215	129	60	325	86	550	282	14	5	702	300	400	201	182	39	7,043	1,887	11,377	3,244	1,708	117
Total—Day and night ..	446		189		411		838		19		1,002		601		221		8,930		14,621		1,825	
	At 3·5 tons		At 1 ton		At 2·5 tons		·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	1,561·00 tons		189·00 tons		1,027·50 tons		628·50 tons		3·80 tons		300·60 tons		661·10 tons		55·25 tons		893·00 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	3,409·80
Average weight per day of 24 hours	.. ..	487·11
Weight per foot width of metalled track	.. ..	60·88

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	1,909·95
Averge weight per day of 24 hours	.. ..	272·85
Weight per foot width of metalled track	.. ..	34·10

Total weight of all traffic in seven days—5,319 75 tons.

(1) Location of observation—Mile 47·75 (Boinchee).

(2) Index No. and name of road—No. 1P. Grand Trunk Road.

(3) Supervising officer—D. N. Banerjee, Overseer.

(4) Nature of road surface—Stone metalled and painted over water bound macadam.

(5) Full width and metalled width of road—40′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—272·79 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1936.																						
26th October ..	9	8	2	2	8	1	53	24	1	..	..	..	21	9	23	27	67	11	284	11	101	1
27th October ..	14	9	6	2	10	2	42	14	6	..	..	..	53	57	27	19	90	15	252	14	143	..
28th October ..	10	7	5	1	4	1	46	7	..	..	..	..	46	23	49	26	104	26	290	47	125	..
29th October ..	19	15	8	7	6	3	25	8	..	..	..	..	16	29	24	14	76	8	215	60	66	13
30th October ..	18	19	8	6	8	3	45	15	..	..	..	..	17	49	20	8	108	10	214	60	103	..
31st October ..	16	16	9	9	10	3	27	21	2	..	..	..	29	16	35	14	58	10	255	58	88	..
1st November ..	18	12	11	5	5	1	70	35	2	..	..	..	66	31	40	42	134	29	321	75	193	..
Total ..	104	86	49	32	51	14	308	124	11	..	..	..	248	214	218	150	637	109	1,831	325	819	14
Total—Day and night ..	190		81		65		432		11		..		462		368		746		2,156		833	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	665·00 tons		81·00 tons		162·50 tons		324·00 tons		2·20 tons		..		508·20 tons		92·00 tons		74·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	1,234·70
Average weight per day of 24 hours	.. ..	176·39
Weight per foot width of metalled track	.. ..	22·05

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	674·80
Average weight per day of 24 hours	.. ..	96·40
Weight per foot width of metalled track	.. ..	12·05

Total weight of all traffic in seven days—1,909·50 tons

(1) Location of observation—Mile 47·75 (Bainchee).

(2) Index No. and name of road—No. 1P. Grand Trunk Road.

(3) Supervising officer—Babu D. N. Banerjee, Overseer.

(4) Nature of road surface—Painted over water bound macadam.

(5) Full width and metalled width of road—40′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—363·14 tons.

Date.	Motor traffic.												Non-motor traffic.														
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.					
	Loaded.		Unloaded.										Loaded.		Unloaded.											
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.				
1937.																										
22nd February ..	17	13	12	10	7	..	40	10	2	..	..	..	2	1	1	1	30	..	148	5	45	..				
23rd February ..	31	48	7	19	9	..	37	34	1	..	..	..	4	3	7	2	75	7	275	33	58	..				
24th February ..	30	15	13	19	8	1	40	17	1	..	..	..	36	10	26	3	83	5	290	69	17	3				
25th February ..	27	37	19	25	10	..	37	22	..	..	..	..	42	5	23	4	92	17	162	46	25	..				
26th February ..	35	42	12	16	11	2	27	34	..	..	..	..	43	1	35	1	71	9	250	28	49	2				
27th February ..	25	33	15	29	12	2	29	33	..	..	2	..	25	19	13	26	71	21	251	54	75	..				
28th February ..	29	25	26	18	10	1	36	18	1	..	..	..	44	11	22	13	82	13	281	55	193	..				
Total ..	194	216	104	136	67	6	246	168	5	..	2	..	196	50	127	50	504	72	1,657	290	462	5				
Total—Day and night ..	410		240		73		414		5		2		246		177		576		1,947		467					
	At 3·5 tons 1,435·00 tons		At 1 ton 240·00 tons		At 2·5 tons 182·50 tons		At ·75 ton 310·50 tons		At ·20 ton 1·00 ton		At 3 ton 0·60 ton		At 1·1 tons 270·60 tons		At ·25 ton 44·25 tons		At ·1 ton 57·60 tons									

Motor traffic:

	Tons.
Total weight in seven days	2,169·00
Average weight per day of 24 hours	309·85
Weight per foot width of metalled track	38·73

Non-motor traffic:

	Tons.
Total weight in seven days	373·05
Average weight per day of 24 hours	53·29
Weight per foot width of metalled track	6·66

Total weight of all traffic in seven days—2,542 05 tons.

(1) Location of observation—Mile 0·25 (Baidyabati).

(2) Index No. and name of road—No. 3. Baidyabati-Tarakeswar Road.

(3) Supervising officer—Babu S. C. Sen, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—386·00 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
8th February ..	..	3	3	1	..	..	2	1	..	..	2	..	73	830	42	58	194	21	497	88	38	5
9th February ..	..	..	..	2	..	..	..	1	..	..	2	..	203	10	625	20	185	28	1,586	132	249	4
10th February ..	..	1	..	2	..	..	2	1	..	..	4	..	63	38	32	10	146	17	803	174	220	26
11th February ..	..	..	2	2	..	..	2	..	..	..	3	1	44	14	53	10	115	10	739	88	209	5
12th February ..	3	1	..	..	..	..	1	1	..	..	4	..	47	98	35	16	101	18	792	69	160	6
13th February ..	1	..	2	..	..	..	1	..	..	..	..	..	357	74	235	87	76	18	1,146	72	96	2
14th February ..	1	2	2	2	..	..	2	..	..	..	8	1	45	85	48	50	181	37	1,341	183	243	15
Total ..	5	7	9	9	..	..	10	4	..	..	23	2	832	1,149	1,070	251	998	149	6,904	806	1,215	63
Total—Day and night ..	12		18		..		14		..		25		1,981		1,321		1,147		7,710		1,278	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	42·00 tons		18·00 tons		..		10·50 tons		..		7·50 tons		2,179·10 tons		330·25 tons		114·70 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	70·50
Average weight per day of 24 hours	.. .. ..	10·07
Weight per foot width of metalled track	.. ..	1·26

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	2,631·55
Average weight per day of 24 hours	.. ..	375·93
Weight per foot width of metalled track	.. ..	47·00

Total weight of all traffic in seven days—2,702·05 tons.

(1) Location of observation—Mile 6·5 (Singur).

(2) Index No. and name of road—No. 3. Baidyabati-Tarakeswar Road.

(3) Supervising officer—Babu S. C. Sen, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—255·54 tons.

Date.	Motor traffic.												Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.				4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
	Loaded.		Unloaded.												Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.			Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.																										
15th February ..	3	4	1	1	..	..	2	..	..	..			..	..	23	469	67	7	145	20	715	199	125	16		
16th February ..	..	1	1	..	..	..	..	..	..	..			..	.	65	47	82	313	117	8	622	474	85	19		
17th February ..	..	1	..	2	..	..	2	..	..	..			..	.	15	9	16	18	147	18	923	206	92	12		
18th February ..	2	..	1	..	..	..	.	..	..	..			2	..	7	32	15	21	88	10	895	128	108	15		
19th February ..	1	2	1	1	..	..	1	3	..	..			2	..	5	294	19	9	100	25	931	113	345	55		
20th February ..	..	1	1	2	..	..			..	..			..	..	61	77	117	122	153	13	703	122	86	15		
21st February ..	..	3	.	4	..	..	4	..	..	..			..	..	21	105	19	34	150	27	1,905	191	99	27		
Total ..	6	12	5	10	.	..	9	3	.	.			4	.	197	1,061	335	524	900	121	6,694	1,433	940	159		
Total—Day and night ..	18		15		..		12		..				4		1,258		859		1,021		8,127		1,099			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton				At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	63·00 tons		15·00 tons		..		9·00 tons		..				1·20 tons		1,383·80 tons		214·75 tons		102·10 tons							

Motor traffic:

		Tons
Total weight in seven days	..	87·00
Average weight per day of 24 hours	..	12·42
Weight per foot width of metalled track	..	1·55

Non-motor traffic:

		Tons.
Total weight in seven days	..	1,701·85
Average weight per day of 24 hours	..	243·12
Weight per foot width of metalled track	..	30·34

Total weight of all traffic in seven days—1,788·85 tons.

(1) Location of observation—Mile 14·90 (Basudebpur).

(2) Index No. and name of road—No. 3. Baidyabati-Tarakeswar Road.

(3) Supervising officer—Babu D. N. Banerjee, Sub-overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0″.

(6) Average weight in tons of all traffic in 24 hours—156·72 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
1st February ..	..	..	..	..	..	..	7	..	..	..	..	..	254	17	9	8	30	5	662	70	171	..
2nd February ..	..	..	..	..	..	..	2	..	..	..	..	..	9	188	14	80	44	..	457	55	170	..
3rd February ..	..	..	..	..	..	..	2	..	..	..	..	..	5	15	3	12	34	2	564	52	158	3
4th February ..	..	..	..	..	..	..	..	..	..	..	..	..	13	47	1	7	28	..	642	33	156	..
5th February ..	..	..	..	..	..	..	2	..	..	..	..	..	222	4	9	..	18	3	673	16	217	2
6th February ..	2	..	..	..	..	..	..	1	..	..	..	..	5	30	58	162	39	3	531	50	173	4
7th February ..	..	..	..	..	1	..	1	..	..	.	..	..	12	48	13	..	38	2	671	79	163	..
Total ..	2	..	..	..	1	..	14	1	..	..	..	..	520	349	107	276	231	15	4,200	355	1,208	9
Total—Day and night ..	2		..		1		15		..		..		869		383		246		4,555		1,217	
	At 3·5 tons 7·00 tons		At 1 ton ..		At 2·5 tons 2·50 tons		At ·75 ton 11·25 tons		At ·20 ton ..		At ·3 ton		At 1·1 tons 955·90 tons		At ·25 ton 95·75 tons		At ·1 ton 24·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	..	20·75
Average weight per day of 24 hours	..	2·97
Weight per foot width of road	..	0·18

Non-motor traffic:

		Tons.
Total weight in seven days	..	1,076·25
Average weight per day of 24 hours	..	153·75
Weight per foot width of road	..	9·61

Total weight of all traffic in seven days—1,097·00 tons.

(1) Location of observation—Mile 0·20 (Boinchee).

(2) Index No. and name of road—No. 8. Boinchee-Baidyapur Road.

(3) Supervising officer—Babu N. L. Sanyal, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—20′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—213·08 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February ..	1	..	4	..	7	3	31	6	..	..	..	..	14	11	15	..	31	2	468	111	56	1
23rd February ..	7	1	5	1	11	2	19	5	..	..	3	..	121	18	38	25	137	18	509	91	73	..
24th February ..	1	..	1	7	3	..	17	7	..	..	..	..	114	25	39	18	152	25	678	141	58	..
25th February ..	2	1	1	1	7	3	7	2	..	..	..	..	130	15	40	11	128	19	515	196	55	3
26th February ..	6	2	..	..	8	2	15	8	..	..	3	5	119	5	34	15	147	13	493	109	64	..
27th February ..	5	1	3	1	16	17	21	3	..	..	4	1	70	13	23	11	86	13	620	99	64	..
28th February ..	6	..	2	..	15	2	20	6	..	..	4	..	74	6	28	10	149	13	659	101	97	..
Total ..	28	5	16	10	67	29	130	37	..	..	14	6	642	93	217	90	830	103	4,242	848	467	4
Total—Day and night ..	33		26		96		167		..		20		735		307		933		5,090		471	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	115·50 tons		26·00 tons		240·00 tons		125 50 tons		..		6·00 tons		808·50 tons		76·75 tons		93·30 tons					

Motor traffic

		Tons.
Total weight in seven days	..	507·00
Average weight per day of 24 hours	..	72·43
Weight per foot width of metalled track	..	9·05

Non-motor traffic

		Tons.
Total weight in seven days	..	984·55
Average weight per day of 24 hours	..	140·65
Weight per foot width of metalled track	..	17·58

Total weight of all traffic in seven days—1,491·55 tons.

(1) Location of observation—Mile 0·75 (Khadnia).

(2) Index No. and name of road—No. 14. Chinsurah Station Road.

(3) Supervising officer—Babu H. N. Saha, Supervisor.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 16′ 0″.

(6) Average weight in tons of all traffic in 24 hours—735·22 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
8th February	..	2	3	1	100	40	118	34	..	..	140	56	78	54	70	22	529	210	712	316	105	..
9th February	..	..	2	..	112	37	103	24	..	..	146	52	114	35	70	7	609	179	713	114	104	4
10th February	2	..	..	..	74	33	99	31	..	..	131	49	69	243	48	27	550	196	701	215	149	5
11th February	2	1	3	..	60	38	115	25	..	..	135	34	223	..	386	22	593	157	1,015	112	153	..
12th February	2	1	3	..	87	39	102	39	..	..	158	45	61	..	27	4	498	167	758	127	160	..
13th February	1	..	1	..	121	38	112	10	..	..	170	42	38	69	21	..	341	86	608	104	19	..
14th February	1	..	1	..	61	27	76	29	..	..	111	44	65	3	132	4	511	113	1,371	221	76	..
Total ..	8	4	13	1	615	252	725	191	..	..	991	322	645	404	754	86	3,631	1,118	5,878	1,239	765	9
Total—Day and night ..	12		14		867		916		..		1,313		1,052		840		4,749		7,117		775	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At 3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	42·00 tons		14·00 tons		2,167·50 tons		687·00 tons		..		393·90 tons		1,157·20 tons		210·00 tons		474·90 tons					

Motor traffic:

	Tons.
Total weight in seven days	2,910·50
Average weight per day of 24 hours	415·79
Weight per foot width of metalled track	25·99

Non-motor traffic:

	Tons.
Total weight in seven days	2,236·00
Average weight per day of 24 hours ..	319·43
Weight per foot width of metalled track ..	19·96

Total weight of all traffic in seven days—5,146·50 tons.

(1) Location of observation—Mile 0·65 (Simla).

(2) Index No. and name of road—No. 15. Chinsurah-Khanpur Road.

(3) Supervising officer—Babu R. C. Karmakar, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—253·42 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937																						
15th February	..	..	..	..	..	..	12	2	..	..	14	3	63	84	97	11	363	36	1,480	425	105	54
16th February	..	..	..	..	..	..	14	4	..	..	11	5	62	100	124	2	352	58	1,313	710	27	..
17th February	..	..	..	2	1	..	22	6	..	..	16	6	65	209	108	8	285	72	914	326	32	1
18th February	..	..	1	..	2	..	18	2	..	..	10	3	76	17	216	85	291	52	738	239	113	..
19th February	..	..	2	..	1	..	12	9	..	..	11	3	24	56	11	15	185	83	790	244	59	11
20th February	..	..	..	..	..	..	36	4	..	..	8	9	66	24	102	8	374	87	886	256	55	..
21st February	..	1	..	1	1	..	20	9	..	..	18	4	107	4	265	9	391	72	881	280	71	2
Total ..	..	1	3	3	5	..	134	36	..	..	88	33	463	494	923	138	2,241	460	7,002	2,480	462	68
Total—Day and night ..	1		6		5		170		..		121		957		1,061		2,701		9,482		530	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	3·50 tons		6·00 tons		12·50 tons		127·50 tons		..		36·30 tons.		1,052·70 tons		265·25 tons		270·10 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	149·50
Average weight per day of 24 hours	.. .. ..	21·35
Weight per foot width of metalled track	.. .. ..	2·66

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,624·35
Average weight per day of 24 hours	..	232·07
Weight per foot width of metalled track	..	29·00

Total weight of all traffic in seven days—1,773·85 tons.

(1) Location of observation—Mile 6·75 (Sheya Bazar).

(2) Index No. and name of road—No. 15. Chinsurah-Khanpur Road.

(3) Supervising officer—Babu R. C. Karmakar, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—211·53 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
24th February	..	3	..	1	..	..	30	1	..	..	..	..	35	218	47	23	153	20	1,017	440	357	6
25th February	..	1	..	1	1	1	23	5	..	..	..	..	6	78	48	194	129	26	810	297	502	69
26th February	..	..	..	..	4	..	17	4	..	..	..	..	27	30	55	60	102	15	738	145	330	15
27th February	2	1	1	..	5	6	19	6	..	..	2	..	25	180	9	31	67	14	440	296	412	6
28th February	..	2	..	..	2	..	9	2	..	..	2	..	14	73	43	148	121	19	847	334	401	10
1st March	..	2	..	..	..	..	16	9	..	..	..	..	19	70	45	38	105	26	926	357	411	205
2nd March	..	2	..	..	..	..	24	5	..	..	..	..	31	64	40	43	112	21	913	319	230	195
Total ..	2	11	1	2	12	7	138	32	..	..	4	..	157	713	287	537	789	141	5,691	2,188	2,643	506
Total—Day and night ..	13		3		19		170		....		4		870		824		930		7,879		3,149	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	45·50 tons		3·00 tons		47·50 tons		127·50 tons		..		1·20 tons		957·00 tons		206·00 tons		93·00 tons					

Motor traffic	Tons.
Total weight in seven days	223·50
Average weight per day of 24 hours	31·93
Weight per foot width of metalled track	3·99

Non-motor traffic	Tons.
Total weight in seven days	1,257·20
Average weight per day of 24 hours ..	179·60
Weight per foot width of metalled track ..	22·45

Total weight of all traffic in seven days—1,480·70 tons.

(1) Location of observation—Mile 1·35 (Basudebpur).

(2) Index No. and name of road—No. 18. Haripal-Dhaniakhali Road.

(3) Supervising officer—Babu D. N. Banerjee, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—16′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—135·00 tons.

Date.	Motor traffic.									
	Lorries.				Buses.		Cars and taxis.		Motor cycles.	
	Loaded.		Unloaded							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.
1937.										
8th February	..	..	..	..	8	2	..	..	..	..
9th February	..	..	..	..	9	1	.	..	..	..
10th February	..	..	..	..	8	1	..	..	..	..
11th February	..	..	..	..	7	1	2	1	..	..
12th February	..	..	..	..	7	..	2	..	..	..
13th February	..	..	..	..	10	10	..	..	..	..
14th February	..	..	..	..	6	4	8	..	..	..
Total ..	..	..	..	..	55	19	10	1	..	..
Total—Day and night ..	....		...		74		11		....	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton	
	..		..		185·00 tons		8·25 tons		..	

	Tons.
Total weight in seven days	193 25
Average weight per day of 24 hours	27·61
Weight per foot width of metalled track	3·45

Date.	Non-motor traffic.										Foot passengers.		Cattle.	
	4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.							
			Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.														
8th February	..	..	174	3	14	..	73	7	481	52	89	3		
9th February	..	..	34	8	19	92	61	10	512	53	101	9		
10th February	..	..	34	5	21	6	83	10	493	69	69	6		
11th February	..	..	19	18	18	..	73	8	575	57	65	27		
12th February	..	..	184	..	74	71	57	4	431	14	84	..		
13th February	..	..	21	3	6	12	33	13	365	88	71	24		
14th February	..	..	20	26	20	24	93	21	694	101	151	16		
Total ..	..	..	486	63	172	205	463	73	3,551	434	630	87		
Total—Day and night ..	....		549		377		536		3,985		717			
	At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	..		603·90 tons		94·25 tons		53·60 tons							

	Tons.
Total weight in seven days	751·75
Average weight per day of 24 hours ..	107 39
Weight per foot width of metalled track ..	13·42

Total weight of all traffic in seven days—945·00 tons.

(1) Location of observation—Mile 13·10 (Dwarbasini).

(2) Index No. and name of road—No. 20. Hooghly-Majnan Road.

(3) Supervising officer—Babu H. N. Saha, Supervisor.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—20′ 0″.

(6) Average weight in tons of all traffic in 24 hours—112·50 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February	..	..	..	..	..	..	..	..	..	..	..	..	8	6	..	6	10	7	362	126	2	..
23rd February	..	..	..	..	..	..	..	..	..	..	..	..	20	9	1	3	62	11	642	180	10	..
24th February	..	..	..	..	..	..	..	..	..	..	..	..	175	41	16	3	265	9	3,220	601	15	..
25th February	..	..	..	..	..	..	..	..	..	..	..	..	49	56	5	52	126	25	1,176	193	1	..
26th February	..	..	..	..	..	..	..	..	..	..	..	..	39	19	15	11	156	4	459	76	6	2
27th February	..	..	..	..	..	..	..	..	..	..	..	..	64	12	10	13	107	27	774	68	12	..
28th February	..	..	..	..	..	..	..	..	..	..	..	..	45	54	6	2	106	13	1,486	290	68	..
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	400	197	62	90	832	96	8,119	1,534	114	2
Total—Day and night ..	..		..		..		..		..		..		597		152		928		9,653		116	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At 1 ton					
	..		..		..		..		..		..		656·70 tons		38·00 tons		92 80 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	..
Average weight per day of 24 hours	.. .. ..	..
Weight per foot width of road	.. ..	..

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	787·50
Average weight per day of 24 hours	.. ..	112·50
Weight per foot width of road	.. .. ..	5·62

Total weight of all traffic in seven days—787·50 tons.

(1) Location of observation—Mile 6·90 (Palba).

(2) Index No. and name of road—No. 20. Hooghly-Majnan Road.

(3) Supervising officer—Babu H. N. Saha, Supervisor.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0″.

(6) Average weight in tons of all traffic in 24 hours—101·92 tons.

Date.	Motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.			
	Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.												
1st February	..	..	..	..	..	..	..	..	..	..		
2nd February	..	..	..	..	..	..	..	..	..	..		
3rd February	..	..	..	..	..	..	..	..	..	..		
4th February	..	..	..	..	..	..	2	2	..	..		
5th February	..	..	..	..	..	..	..	..	..	..		
6th February	..	..	..	..	..	..	..	..	..	..		
7th February	..	..	..	..	..	..	2	..	..	..		
Total ..	..	..	..	..	..	..	4	2	..	..		
Total—Day and night ..	..		..		..		6		..			
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton			
	.		..		..		4·50 tons		..			
	Total weight in seven days									4·50 tons		
	Average weight per day of 24 hours									0·64		
	Weight per foot width of road									0·03		

Date.	Non-motor traffic.													
	4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.			
			Loaded.		Unloaded.									
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.		
1937.														
1st February	2	..	30	14	23	3	109	19	1,080	137	33	2		
2nd February	..	..	16	7	17	8	74	10	977	168	35	5		
3rd February	..	..	88	46	17	2	120	38	1,002	147	35	2		
4th February	4	..	18	11	81	12	90	14	818	181	37	2		
5th February	..	..	31	22	38	6	100	15	885	149	29	4		
6th February	..	..	82	68	25	..	144	27	825	182	55	6		
7th February	..	..	30	14	109	36	101	21	882	138	38	6		
Total ..	6	..	295	182	310	67	738	144	6,469	1,102	262	27		
Total—Day and night ..	6		477		377		882		7,571		289			
	At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton							
	1·80 tons		524·70 tons		94·25 tons		88·20 tons							
	Total weight in seven days						705·95 tons							
	Average weight per day of 24 hours						101·28							
	Weight per foot width of road						5·06							

Total weight of all traffic in seven days—713·45 tons.

(1) Location of observation—Mile 0·3 (Magraganj).

(2) Index No. and name of Road—No. 25. Mogra-Khanpur Road.

(3) Supervising officer—Babu H. N. Saha, Supervisor.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—20′ 0″.

(6) Average weight in tons of all traffic in 24 hours—117·19 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th February	..	..	..	..	..	..	..	..	..	..	..	..	28	10	40	2	261	10	2,469	306	36	..
16th February	..	..	..	..	..	..	..	..	..	..	..	..	90	1	54	7	47	3	967	688	100	8
17th February	..	..	..	..	..	..	..	..	..	..	..	..	119	9	58	4	73	9	969	356	97	7
18th February	..	..	..	..	..	..	..	..	..	..	..	..	65	4	49	12	42	..	847	164	74	2
19th February	..	..	..	..	..	..	..	..	..	..	..	..	43	11	34	6	45	17	1,306	306	125	5
20th February	..	..	..	..	..	..	..	..	..	..	..	..	72	14	44	2	71	8	941	237	85	10
21st February	..	..	..	..	..	..	2	..	..	..	..	..	109	22	64	10	58	12	1,014	313	93	..
Total ..	..	..	..	..	..	..	2	..	..	..	..	..	526	71	343	43	597	59	8,513	2,370	610	32
Total—Day and night ..	....		....		....		2		....		....		597		386		656		10,883		642	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton.					
	....		....		....		1·50 tons		....		....		656·70 tons		96·50 tons		65·60 tons.					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	1·50
Average weight per day of 24 hours	.. ..	0·22
Weight per foot width of road	.. .. ..	0·01

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	818·80
Average weight per day of 24 hours	.. ..	116·97
Weight per foot width of road	.. .. ..	5·85

Total weight of all traffic in seven days—820·30 tons.

(1) Location of observation—Mile 14·9. (Bhastara).

(2) Index No. and name of road—No. 25. Mogra-Khanpur Road.

(3) Supervising officer—Babu R. C. Karmakar, Supervisor.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—20′ 0″.

(6) Average weight in tons of all traffic in 24 hours—51·38 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February	..	..	..	..	..	..	..	..	..	..	..	..	7	1	2	3	1	..	531	37	29	15
23rd February . ..	..	..	..	..	..	..	..	..	..	..	..	.	15	24	17	3	46	6	2,003	260	63	29
24th February	..	..	..	..	..	..	..	..	..	..	.	..	14	8	10	10	61	7	889	268	88	32
25th February	..	..	..	..	..	..	..	..	..	..	..	..	28	27	17	10	84	9	1,031	200	584	27
26th February	..	..	..	..	..	..	..	..	..	..	..	..	13	8	7	3	59	..	1,102	112	43	14
27th February	..	..	..	..	..	..	..	..	..	..	..	..	30	27	26	5	49	12	2,111	479	60	25
28th February	..	..	..	..	..	..	..	..	..	..	..	..	31	27	20	6	49	6	773	177	48	19
Total ..	..	..	..	..	.	..	..	..	..	..	..	..	138	122	99	40	349	40	8,440	1,533	915	161
Total—Day and night ..	....		....		....		..		....		....		260		139		389		9,973		1,076	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		....		....		....		....		286·00 tons		34·75 tons.		38·90 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. ..	..
Average weight per day of 24 hours	.. ..	..
Weight per foot width of road	.. ..	..

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	.. 359·65
Average weight per day of 24 hours	.. ..	.. 51·38
Weight per foot width of road	.. .. ..	.. ..

Total weight of all traffic in seven days—359·65 tons.

(1) Location of observation—0·75 mile. (Choto Belu).

(2) Index No. and name of road—No. 29. Nabagram-Charpur Road.

(3) Supervising officer—Babu S. C. Sen, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—20′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—142·06 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day	Night.
1937.																						
1st February	..	..	..	..	..	..	6	..	..	..	8	4	17	116	20	13	231	43	821	196	98	4
2nd February	..	..	.	..	..	2	8	6	..	..	21	6	59	15	88	4	271	33	1,034	165	101	12
3rd February	..	..	..	..	..	..	11	1	..	..	17	2	22	24	16	4	222	35	904	216	142	11
4th February	..	..	..	..	..	..	2	2	..	..	8	2	28	18	26	11	189	42	816	157	83	9
5th February	..	..	..	..	..	..	6	1	..	..	15	2	17	119	15	18	175	49	698	208	45	15
6th February	..	..	..	..	..	..	3	2	..	..	10	2	65	17	65	15	318	56	1,136	248	91	10
7th February	..	..	..	..	..	..	8	2	.	..	8	4	26	33	17	9	283	47	842	160	44	11
Total ..	..	..	..	..	..	2	44	14	..	..	87	22	234	342	247	74	1,689	305	6,251	1,350	604	72
Total—Day and night ..	....		....		2		58		....		109		576		321		1,994		7,601		676	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		5·00 tons		43·50 tons		....		32·70 tons		633·60 tons.		80·25 tons		199·40 tons					

Motor traffic:

	Tons.
Total weight in seven days	48·50
Average weight per day of 24 hours	6·93
Weight per foot width of metalled track	0·87

Non-motor traffic:

	Tons.
Total weight in seven days	945·95
Average weight per day of 24 hours	135·13
Weight per foot width of metalled track	16·90

Total weight of all traffic in seven days—994·45 tons.

(1) Location of observation—Mile 13·60 (Kristorampur).

(2) Index No. and name of road—No. 31. Old Benares Road.

(3) Supervising officer—Babu B. B. Sen, Sub-overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—12′ 0″.

(6) Average weight in tons of all traffic in 24 hours—65·85 tons.

Date.	Motor traffic.										Non-motor traffic.												
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th February	..	..	..	..	..	..	1	1	..	..	..	..	11	23	17	2	112	8	2,084	1,355	440	271
16th February	..	..	..	..	..	..	2	..	..	..	..	..	12	42	26	13	91	7	1,310	667	41	55
17th February . ..	..	..	..	..	..	..	1	..	..	..	.	..	24	13	42	11	81	6	1,919	955	40	35
18th February	..	..	..	..	..	..	..	..	..	..	..	..	22	1	30	1	28	..	1,624	505	82	1
19th February	..	..	..	..	..	..	..	..	..	..	..	..	26	17	14	12	51	3	1,550	877	51	21
20th February	..	..	..	..	..	..	..	..	..	..	..	..	15	67	19	8	97	16	1,616	996	57	3
21st February	..	..	..	..	..	..	1	..	..	..	..	..	26	5	51	9	79	4	2,582	1,255	76	4
Total ..	..	..	..	..	.	..	5	1	..	..	..	..	136	168	199	56	539	44	12,685	6,610	787	390
Total—Day and night ..	....		....		....		6		....		....		304		255		583		19,295		1,177	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At 1 ton					
	....		....		....		4·50 tons		....		....		334·40 tons		63·75 tons		58·30 tons					

Motor traffic:

			Tons.
Total weight in seven days ..	..	..	4·50
Average weight per day of 24 hours	..	..	0·64
Weight per foot width of road ..	..	..	0·05

Non-motor traffic:

			Tons.
Total weight in seven days ..	..	..	456·45
Average weight per day of 24 hours	..	..	65·21
Weight per foot width of road ..	..	..	5·40

Total weight of all traffic in seven days—460·95 tons.

(1) Location of observation—Mile 9·5 (Inchura).

(2) Index No. and name of road—No. 32. Pandua-Kalna Road.

(3) Supervising officer—Babu N. L. Sanyal, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—138·99 tons.

Date.	Motor traffic										Non-motor traffic.										
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.
1937.																						
1st February	..	..	..	..	..	..	1	..	..	..	..	..	61	37	23	12	44	3	316	18	157	..
2nd February	..	..	..	..	..	..	..	..	..	..	..	..	83	51	20	4	47	5	331	40	201	6
3rd February	..	..	..	..	..	..	..	2	..	..	..	..	78	49	31	2	42	9	304	31	139	3
4th February	..	..	..	..	..	..	2	..	..	..	..	..	64	43	23	5	44	3	249	11	133	5
5th February	..	..	..	..	..	..	3	..	..	..	..	..	61	63	43	11	50	6	363	28	148	8
6th February	..	..	..	..	..	..	..	..	..	..	..	..	76	50	29	9	49	7	406	41	285	6
7th February	..	..	..	..	..	..	2	..	..	..	..	..	56	18	24	5	42	11	302	81	117	11
Total ..	..	..	..	..	..	..	8	2	..	..	..	..	479	311	193	48	318	44	2,271	250	1,180	39
Total—Day and night ..	....		....		....		10		....		....		790		241		362		2,521		1,219	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	....		....		....		7·50 tons		....		....		869·00 tons		60·25 tons		36·20 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	7·50
Average weight per day of 24 hours	.. ..	1·07
Weight per foot width of metalled track	.. ..	0·14

Non-motor traffic:

		Tons.
Total weight in seven days	.. .. ..	965·45
Average weight per day of 24 hours	.. ..	137·92
Weight per foot width of metalled track	.. ..	17·24

Total weight of all traffic in seven days—972·95 tons.

(1) Location of observation—Mile 1·1 (Benepara).

(2) Index No. and name of road—No. 32. Pandua Kalna Road.

(3) Supervising officer—Babu N. L. Sanyal, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—24′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—118·57 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
8th February ..	..	..	..	..	..	..	8	1	..	..	1	..	108	11	24	1	194	18	1,461	115	83	7
9th February ..	..	..	..	..	..	..	7	2	..	..	2	..	85	11	38	5	210	19	1,341	134	73	18
10th February ..	1	..	..	..	..	..	6	3	..	..	..	..	60	13	23	8	168	48	1,825	347	113	7
11th February ..	..	..	..	..	..	..	4	2	..	..	..	..	78	12	25	2	152	10	969	112	79	7
12th February ..	..	..	..	..	..	..	10	1	..	..	..	..	36	6	5	1	149	16	1,210	64	92	4
13th February ..	..	..	..	..	..	..	11	3	..	..	2	..	11	6	1	4	119	19	935	142	81	5
14th February ..	..	..	..	..	..	..	9	..	..	..	..	..	88	22	24	..	183	23	1,823	255	87	51
Total ..	1	..	..	..	..	..	55	12	..	..	5	..	466	81	140	21	1,175	153	9,564	1,169	608	99
Total—Day and night ..	1		....		....		67		....		5		547		161		1,328		10,733		707	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 tons		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 tons		At ·1 ton					
	3·50 tons		....		....		50·25 tons		....		1·50 tons		601·70 tons		40·25 tons		132·80 tons					

Motor traffic:

			Tons.
Total weight in seven days	..	..	53·75
Average weight per day of 24 hours	..	..	7·68
Weight per foot width of metalled track	..	..	0·96

Non-motor traffic:

			Tons.
Total weight in seven days	..	..	776·25
Average weight per day of 24 hours	..	..	110·89
Weight per foot width of metalled track	..	..	13·86

Total weight of all traffic in seven days—830·00 tons.

(1) Location of observation—mile 0·10 (Makla).

(2) Index No. and name of road—No. 36. Uttarpara-Kalipur Road.

(3) Supervising officer—Babu B. B. Sen, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—20′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—505·08 tons.

Date.	Motor traffic.										Non-motor traffic.													
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
1st February	29	6	26	7	53	13	8	2	2	.	1	1	74	34	56	22	473	118	3,506	777	34	..
2nd February	24	5	25	4	53	14	18	1	..	..	3	1	70	33	46	16	474	108	3,564	798	51	30
3rd February	24	2	23	3	54	18	18	5	..	..	2	2	87	36	52	27	449	127	3,943	850	46	10
4th February	24	6	20	7	52	21	7	9	..	..	6	2	66	31	51	19	463	107	3,541	993	29	..
5th February	26	3	26	3	51	14	9	..	..	..	1	1	69	29	54	10	503	118	4,453	656	31	2
6th February	17	2	17	4	55	17	13	3	..	..	..	2	67	43	57	23	502	136	4,558	857	20	..
7th February	18	3	19	1	51	20	32	7	1	..	2	2	55	49	44	6	577	131	8,296	1,196	19	7
Total ..	162	27	155	29	369	117	105	27	3	..	15	11	488	255	360	123	3,441	845	31,861	6,127	230	49
Total—Day and night ..	189		184		486		132		3		26		743		483		4,286		37,988		279	
	At 3·5 tons 661·50 tons		At 1 ton 185·00 tons		At 2·5 tons 1,215·00 tons		At ·75 ton 99·00 tons		At ·20 ton 0·60 ton		At 3 ton 7·80 tons		At 1·1 tons 817·30 tons		At ·25 ton 120·75 tons		At ·1 ton 428·60 tons					

Motor traffic:

		Tons.
Total weight in seven days	.. .. ..	2,161·10
Average weight per day of 24 hours	.. .. ..	308·73
Weight per foot width of metalled track	.. .. ..	38·59

Non-motor traffic:

		Tons.
Total weight in seven days	.. ..	1,374·45
Average weight per day of 24 hours	.. ..	196·35
Weight per foot width of metalled track	.. ..	24·54

Total weight of all traffic in seven days—3,535·55 tons.

(1) Location of observation—Mile 4·50 (Kalipur).

(2) Index No. and name of road—No. 36. Uttarpara-Kalipur Road.

(3) Supervising officer—Babu B. B. Sen, Sub-overseer.

(4) Nature of road surface—Stone metalled.

(5) Full width and metalled width of road—20′ 0″ and 8′ 0″.

(6) Average weight in tons of all traffic in 24 hours—310·51 tons.

Date.	Motor traffic.										Non-motor traffic.								Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.					
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
8th February ..	..	2	..	..	49	11	9	2	..	..	19	8	57	51	48	17	446	102	2,071	671	61	9
9th February ..	2	1	1	..	53	11	7	..	..	..	23	4	58	37	47	7	393	123	2,253	489	16	..
10th February ..	..	..	..	..	53	9	6	1	..	..	17	5	45	41	2	4	554	94	1,820	546	..	..
11th February ..	1	..	..	1	52	8	3	..	..	..	18	1	28	20	29	7	315	21	1,516	130	11	..
12th February ..	..	..	..	..	53	11	7	..	..	..	22	12	40	9	27	6	459	47	2,655	377	95	2
13th February ..	..	..	..	..	51	15	7	2	.	..	24	7	23	23	12	4	248	55	1,788	629	6	2
14th February ..	..	..	..	..	50	11	16	5	.	..	10	3	49	40	30	15	455	86	2,593	1,113	16	8
Total ..	3	3	1	1	361	76	55	10	.	..	133	42	300	221	195	60	2,672	528	14,696	3,955	205	19
Total—Day and night ..	6		2		437		65		...		175		521		255		3,200		18,651		224	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	21·00 tons.		2·00 tons		1,092·50 tons		48·75 tons		...		52·50 tons		573·10 tons		63·75 tons		320·00 tons					

Motor traffic	Tons.
Total weight in seven days	1,164·25
Average weight per day of 24 hours	166·32
Weight per foot width of metalled track	20·79

Non-motor traffic	Tons.
Total weight in seven days	1,009·35
Average weight per day of 24 hours	144·19
Weight per foot width of metalled track	18·02

Total weight of all traffic in seven days—2,173·60 tons.

(1) Location of observation—Mile 1·1 (Balarambati).

(2) Index No. and name of road—No. 80. Singur-Mosat Road.

(3) Supervising officer—Babu S. C. Sen, Sub-overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—14′ 0″.

(6) Average weight in tons of all traffic in 24 hours—37·84 tons.

Date.	Motor traffic.										Non-motor traffic.											
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.		Foot passengers.		Cattle.	
	Loaded.		Unloaded.										Loaded.		Unloaded.							
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
22nd February	..	..	..	..	..	..	..	..	..	..	..	..	..	21	19	9	4	..	346	162	12	..
23rd February	..	..	..	..	..	..	..	..	..	..	..	..	2	18	2	29	39	4	470	307	8	7
24th February	..	..	..	..	..	..	..	..	..	..	..	..	1	20	10	16	63	9	860	557	9	11
25th February	..	..	..	..	..	..	..	..	..	..	..	..	2	21	16	8	68	3	1,119	384	31	2
26th February	..	..	..	..	..	..	..	..	..	..	..	..	5	31	25	10	59	8	995	301	43	..
27th February	..	..	..	..	..	..	..	..	..	..	..	..	21	..	16	27	54	3	1,150	449	36	7
28th February	..	..	..	..	..	..	..	..	..	..	..	..	5	14	9	1	68	3	1,098	383	28	4
Total ..	..	..	..	..	..	..	..	..	..	..	..	..	36	125	97	100	355	30	6,058	2,543	167	31
Total—Day and night ..	..		..		..		..		..		..		161		197		385		8,601		198	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·3 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		..		..		..		177·10 tons		49·25 tons		38·50 tons					

Motor traffic:

	Tons.
Total weight in seven days	..
Average weight per day of 24 hours	..
Weight per foot width of road	..

Non-motor traffic:

	Tons.
Total weight in seven days	264·85
Average weight per day of 24 hours	37·84
Weight per foot width of metalled track	2·67

Total weight of all traffic in seven days—264·85 tons.

(1) Location of observation—Mile 1·10 (Bhimpur).

(2) Index No. and name of road—No. 83. Tarakeswar-Champadanga Road.

(3) Supervising officer—Babu D. N. Banerji, Sub-overseer.

(4) Nature of road surface—Unmetalled.

(5) Full width of road—16′ 0″.

(6) Average weight in tons of all traffic in 24 hours—183·30 tons.

Date.	Motor traffic.												Non-motor traffic.										Foot passengers.		Cattle.	
	Lorries.				Buses.		Cars and taxis.		Motor cycles.		4-wheeled carts, hackney carriages, etc.		Bullock carts.				Other types of vehicles including rickshaws and cycles.									
	Loaded.		Unloaded.										Loaded.		Unloaded.											
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.
1937.																						
15th February ..	..	..	..	..	..	..	5	..	..	..	..	..	42	..	35	..	60	19	1,506	352	256	..
16th February ..	..	..	..	..	..	..	9	2	..	..	..	..	53	48	16	21	101	13	1,283	417	78	4
17th February ..	..	..	..	..	..	..	11	6	..	..	..	..	291	59	34	54	209	4	1,969	611	219	44
18th February ..	..	..	..	..	..	..	5	..	..	..	..	..	37	..	9	..	64	..	2,127	111	161	..
19th February ..	..	..	..	..	..	..	10	2	..	..	..	..	24	17	13	..	19	17	1,397	261	115	18
20th February ..	..	..	..	..	..	..	11	4	..	..	..	..	283	36	46	23	140	18	2,538	347	174	..
21st February ..	..	..	..	..	..	..	15	1	..	..	..	..	30	46	43	23	120	22	1,757	316	151	14
Total ..	..	..	..	..	..	..	66	15	..	..	..	..	760	206	196	121	713	93	12,577	2,415	1,157	80
Total—Day and night ..	..		..		..		81		..		..		966		317		806		11,992		1,237	
	At 3·5 tons		At 1 ton		At 2·5 tons		At ·75 ton		At ·20 ton		At ·5 ton		At 1·1 tons		At ·25 ton		At ·1 ton					
	..		..		..		60·75 tons		..		..		1,062·50 tons		79·25 tons		80·60 tons					

Motor traffic:

	Tons.
Total weight in seven days ..	60·75
Average weight per day of 24 hours ..	8·68
Weight per foot width of road ..	0·54

Non-motor traffic:

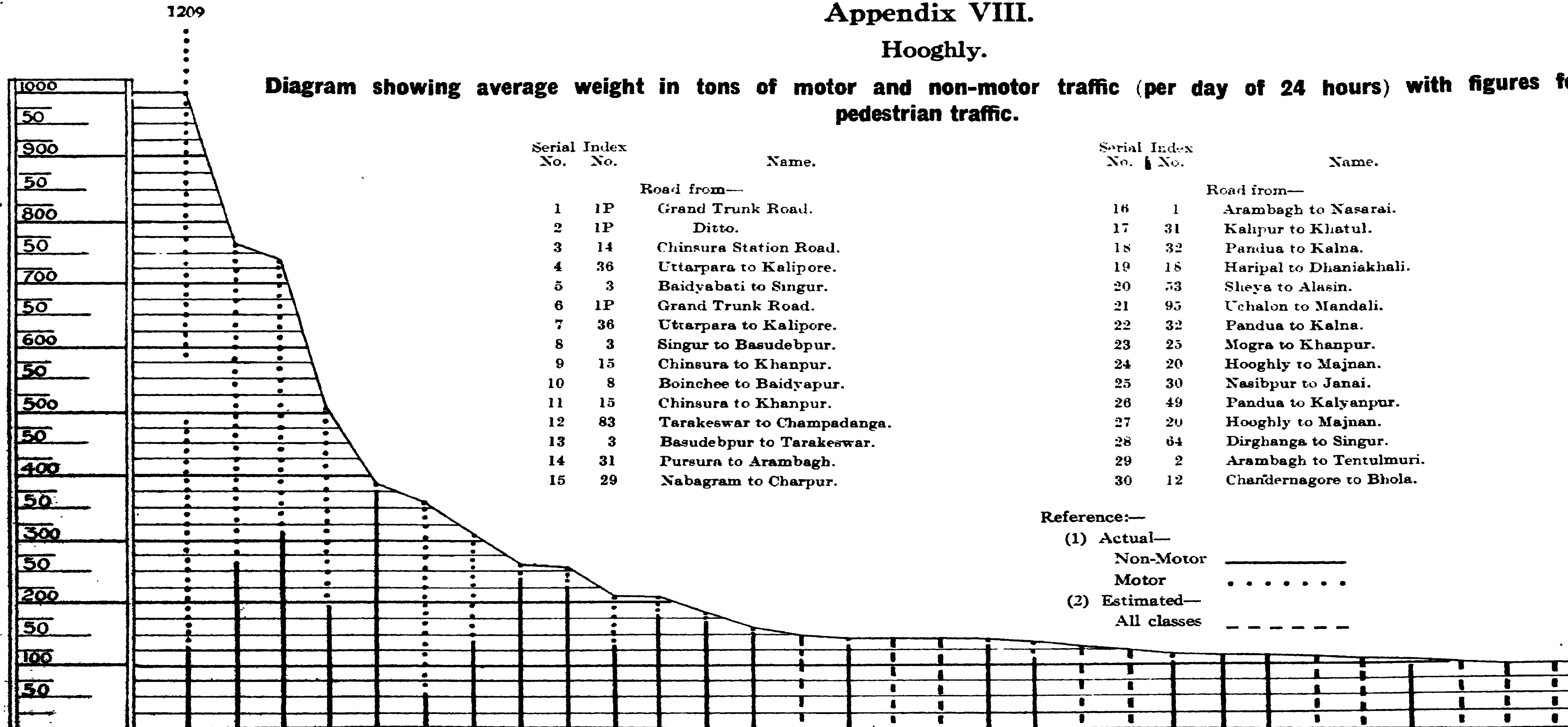
	Tons.
Total weight in seven days ..	1,222·35
Average weight per day of 24 hours ..	174·62
Weight per foot width of road ..	10·91

Total weight of all traffic in seven days—1,283 10 tons.

Appendix VIII.

Hooghly.

Diagram showing average weight in tons of motor and non-motor traffic (per day of 24 hours) with figures for pedestrian traffic.



Serial No.	Index No.	Name.
		Road from—
1	1P	Grand Trunk Road.
2	1P	Ditto.
3	14	Chinsura Station Road.
4	36	Uttarpara to Kalipore.
5	3	Baidyabati to Singur.
6	1P	Grand Trunk Road.
7	36	Uttarpara to Kalipore.
8	3	Singur to Basudebpur.
9	15	Chinsura to Khanpur.
10	8	Boinchee to Baidyapur.
11	15	Chinsura to Khanpur.
12	83	Tarakeswar to Champadanga.
13	3	Basudebpur to Tarakeswar.
14	31	Pursura to Arambagh.
15	29	Nabagram to Charpur.

Serial No.	Index No.	Name.
		Road from—
16	1	Arambagh to Nasarai.
17	31	Kalipur to Khatul.
18	32	Pandua to Kalna.
19	18	Haripal to Dhaniakhali.
20	53	Sheya to Alasin.
21	95	Uchalon to Mandali.
22	32	Pandua to Kalna.
23	25	Mogra to Khanpur.
24	20	Hooghly to Majnan.
25	30	Nasibpur to Janai.
26	49	Pandua to Kalyanpur.
27	20	Hooghly to Majnan.
28	64	Dirghanga to Singur.
29	2	Arambagh to Tentulmuri.
30	12	Chandernagore to Bhola.

Reference:—
(1) Actual—
Non-Motor ————————
Motor • • • • • • • •
(2) Estimated—
All classes – – – – – –

Pedestrians ..	5,305	2,088	1,917	5,427	1,101	278	2,064	1,161	1,354	729	1,125	2,142	651	..	1,086
Total N. M. T. & M. T.	1,209	760	735	505	388	363	310	255	253	213	212	184	157	*150*	142
Motor traffic ..	1,073	487	418	309	19	310	166	12	21	72	32	9	3	..	7
Non-motor traffic ..	136	273	318	196	376	53	144	243	232	141	180	175	154	..	135
Serial No. ..	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Pedestrians ..	..	..	360	569	..	..	1,533	1,555	1,379	..	..	1,081	..	..	..
Total N. M. T. & M. T.	*140*	*140*	139	135	*130*	*125*	*119*	*117*	*113*	*110*	*105*	*102*	*100*	*95*	*95*
Motor traffic ..	..	..	1	28	..	..	8	..	..	..	..	1	..	..	..
Non-motor traffic ..	..	..	138	107	..	..	111	117	113	..	..	101	..	..	..
Serial No. ..	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

Appendix VIII.

Hooghly.

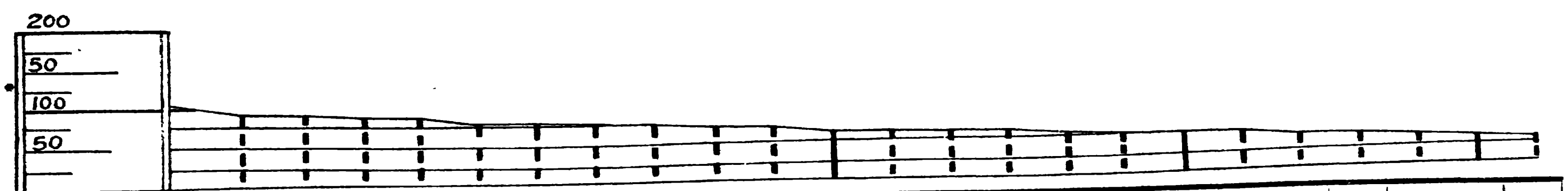
Diagram showing average weight in tons of motor and non-motor traffic (per day of 24 hours) with figures for pedestrian traffic.

Serial No.	Index No.	Name.
		Road from—
31	67	Gaja to Rajbalhat.
32	10	Boinchee to Dasghara.
33	15	Dhaniakhali to Khanpur.
34	94	Subirchak to Badanganj.
35	59	Autpur to Sitapur.
36	7	Bhadreswar to Nasibpur.
37	31	Jangipara to Pursura.
38	55	Somra to Dumurdaha.
39	74	Moshat to Dihitpur.
40	90	Goghat to Kumarganj.
41	31	Chanditola to Jangipara.
42	52	Ramnathpur to Haral.

Serial No.	Index No.	Name.
		Road from—
43	57	Tribeni to Guptipara.
44	66	Gangadharpur to Nawabpur.
45	87	Arambagh to Udrajpur.
46	89	Bhikdas to Balli.
47	25	Mogra to Khanpur.
48	35	Tarakeswar to Jamdara.
49	71	Harananda to Dihakash.
50	84	Arambagh to Arandi.
51	65	Dipa to Baligori.
52	80	Singur to Moslat.
53	85	Arambagh to Bondar.

NOTE.—Roads carrying traffic of less than 10 tons per day of 24 hours have not been included in the graph.

Reference:—
(1) Actual—
Non-Motor ————
Motor . . . .
(2) Estimated—
All classes — — — — —



Pedestrians	..	..	..	..	..	..	..	..	..	..	2,756			..	..		1,425			..	..	1,229	..
Total N.M. T. & M. T.	90	90	85	85	80	80	75	75	70	70	66	[illegible]	60	60	55	50	51	[illegible]	[illegible]	[illegible]	40	38	[illegible]
Motor traffic	..	..	..	..	..	..	..	..	..	..	1						..					..	..
Non-motor traffic	..	..	..	..	..	..	..	..	..	..	65	..	..	..			51	..				38	..
Serial No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53

Appendix IX.

Hooghly.

Statement showing particulars of item included in the road system recommended for improvement.

Index No.	Classification.	Location.			Purpose served	Sub-sections.			Length in miles.	Rough cost in rupees.	
		From—	To—	Route.		No.	From—	To—		Specification "A."	Specification "B."
1	2	3	4	5	6	7	8	9	10	11	12
A	Provincial—Trunk	Bally ..	Debipur (Burdwan district boundary).	Following Grand Trunk road (No. 1P) for the whole length.	The Grand Trunk road is at present the main traffic route through the district and serves the most important area of district which lies on the bank of the Ganges up to Magra. The portion of the road beyond Magra diverges from the river and leads into the Burdwan district.	1 2 3 4 5	Bally .. Serampore .. Chinsura .. Magra .. Pandua ..	Serampore .. Chinsura .. Magra .. Pandua .. Debipur ..	6·00 16·00 10·00 9·00 8·00	25,000 25,000 1,00,000 1,00,000 75,000	.. ..
B	Ditto ..	Baigachhi (Howrah district boundary).	Keatara (Burdwan district boundary).	Following District Board road No. 31 up to Sepahigachi, District Board road No. 19 to near Haripal, District Board road No. 18 to Dhaniakhali, District Board road No. 15 for about 4 miles, and thence by new alignment to the district boundary near Keatara.	The road will form a section of the bi-pass to the Grand Trunk Road between Howrah and Memari, from which point two Trunk roads branch; one, the Grand Trunk road, leading to the west and the other a proposed Trunk road leading ultimately to North Bengal.	1 2 3 4 5 6	Baigachhi .. Chanditala .. Sheakhala .. Sepahigachi .. Haripal .. Dhaniakhali ..	Chanditala .. Sheakhala .. Sepahigachi .. Haripal .. Dhaniakhali .. Keatara ..	2·00 8·50 3·50 3·30 9·50 6·00	1,00,000 3,25,000 1,25,000 1,25,000 3,50,000 2,50,000	50,000 1,75,000 75,000 75,000 1,75,000 1,50,000
C	Ditto ..	Kirtichandrapur (Burdwan district boundary).	Khatul (Bankura district boundary).	Following District Board road No. 1 for about one mile, new alignment for about 4 miles to Madina and District Board road No. 31 to district boundary.	The road forms a section of the Trunk road leading to Bombay and Madras, of which a portion (Burdwan-Arambagh Road) has already been taken up for construction.	1 2	Kirtichandrapur .. Surul-Chowmatha	Surul-Chowmatha Khatul ..	6·10 4·00	8,25,000 1,75,000	7,25,000 1,00,000
D	Ditto ..	Surul-Chowmatha	Harihar (Midnapore district boundary).	Following District Board road No. 95	The road forms a section of the Midnapore Trunk road, being in continuation of the Trunk road already under construction leading from Burdwan towards the south.	1	Surul-Chowmatha	Harihar ..	10·13	4,00,000	2,50,000

E	District—Main ..	Sepahigachi on item B above.	Kirtichandrapur on item C above.	Following District Board roads Nos. 31 and 1.	The road will form the main line of communication connecting the Arambagh subdivision with the road system on the east of the Damodar and also with the Trunk road leading to Burdwan. The section between Champadanga and Jairampur is subject to heavy inundation and this length of road, although essentially required will be expensive to construct.	1	Sepahigachi ..	Pursura (Champadanga).	11·00	4,50,000	2,75,000
						2	Pursura (Champadanga).	Rasulpur ..	7·00	15,00,000	14,00,000
						3	Rasulpur ..	Arambagh ..	6·00	5,75,000	4,75,000
						4	Arambagh ..	Kirtichandrapur ..	4·83	3,50,000	2,25,000
F	Ditto ..	Chinsura on item A above.	Bhandarhati on item B above.	Following District Board roads Nos. 14 and 15 to above one mile west of Dadpur, and thence by new alignment to meet the Trunk road "B" above, about 1½ miles south of Dhaniakhali.	The road will form the main east-west line of communication running from district headquarters through the heart of the district.	1	Chinsura ..	Dadpur ..	11·00	5,50,000	2,75,000
						2	Dadpur ..	Bhandarhati ..	8·00	4,00,000	2,50,000
G	Ditto ..	Bhandarhati on item B above.	Champadanga on item E above.	Following new alignment for about 6 miles to Tarakeswar and thence by District Board road No. 82 to meet item E near Champadanga.	The road forms a continuation of item F providing communication in the area lying round Tarakeswar. It will serve as a feeder to the railway.	1	Bhandarhati ..	Tarakeswar ..	6·00	4,00,000	3,25,000
						2	Tarakeswar ..	Champadanga ..	4·50	2,25,000	1,25,000
H	Ditto ..	Dadpur on item F above.	Bakulia (Burdwan district boundary).	Following District Board road No. 51 up to Darbasini (4½ miles), then by a new alignment up to the junction of District Board roads Nos. 49 and 20 (¾ mile) and thence up to Pandua (7¾ miles) by District Board road No. 49 and thence by District Board road No. 32 up to the district boundary at Bakulia.	The road will form the main cross line of communication running through the north-eastern portion of the district and will link up with the Kalna road in the Burdwan district. It will serve as a feeder to three lines of railway	1	Dadpur ..	Pandua ..	12·78	5,50,000	4,00,000
						2	Pandua ..	Inchura ..	9·15	3,50,000	2,25,000
						3	Inchura ..	Bakulia ..	3·50	1,75,000	1,50,000
I	District—Secondary	Inchura on item H above.	Balagarh and on to west bank of Bhagirathi.	Following District Board road No. 42 for about 3½ miles and thence by new alignment to district boundary on the west bank of Bhagirathi near Balagarh.	The road forms a branch to item H leading to the thana at Balagarh and then to the river opposite a corresponding road in the Nadia district.	1	Inchura ..	Somra ..	3·67	1,50,000	1,00,000
						2	Somra ..	Balagarh ..	2·38	1,00,000	75,000
J	Inter-district—Main	Serampore on item A above.	Sitapur (Howrah district boundary opposite Jagatballavpur railway station).	Following District Board road No. 29 to Sheakhala, new alignment for about 3 miles and District Board road No. 74 to district boundary near Sitapur.	The road forms a cross line of communication in the south of the district connecting the two Trunk roads, items A and B, and linking up with the road system of the Howrah district leading to Amta	1	Serampore ..	Monirampur ..	6·10	3,00,000	2,25,000
						2	Monirampur ..	Sheakhala ..	5·00	2,50,000	1,50,000
						3	Sheakhala ..	Sitapur ..	6·10	2,75,000	2,00,000

Index No.	Classification.	Location: From—	Location: To—	Location: Route	Purpose served	Sub-sections: No.	Sub-sections: From—	Sub-sections: To—	Length in miles.	Rough cost in rupees: Specification "A."	Rough cost in rupees: Specification "B."
1	2	3	4	5	6	7	8	9	10	11	12
K	District—Main ..	Uttarpara on item A above.	Kalipur on item B above.	Following District Board Road No. 36.	The road forms a short but important cross connection between the Trunk roads—items A and B in the extreme south of the district	1	Uttarpara ..	Kalipur ..	4·40	2,25,000	1,75,000
L	Ditto (Sub-section No. 3 is Provincial—Trunk.)	Joyrampur on item E above.	Palaspai ..	Following entirely a new alignment passing between— (i) Kanpur and Madhabpur. (ii) Kapsit and Dihi-Bagnan. (iii) Gourhati and Para-Bagnan. and thence to Khanakul *via* Ramnagar, thence *via* Rajhati-Sabalsingpur, and Harischuk to Palaspai.	The road will form the main line of communication in the southern portion of the Arambagh subdivision and will connect up with the road system in the Howrah district.	1 2 3	Jairampur .. Khanakul .. Rajhati ..	Khanakul .. Rajhati .. Palaspai ..	11·31 3·00 5·00	8,25,000 2,00,000 6,75,000	6,50,000 1,50,000 6,00,000
M	Provincial—Trunk	Rajhati ..	Kagnan ..	Following entirely a new alignment	The road will form a short link between the road system in the Hooghly and Midnapore districts.	1	Rajhati ..	Kagnan ..	4·13	4,50,000	3,75,000
N	District—Secondary	Arambagh (west bank of Darakeswar) including short link to connect up with item M of Bankura district.	Badanganj ..	Following District Board road No. 2 up to Pandugram and thence by District Board road No. 94 to Badanganj with short extension northwards starting about one mile east of Badanganj.	This road provides an east-west line of communication running from the subdivisional headquarters to the extreme western corner of the district, which is capable of development. The bridging of Darakeswar not included in the scheme.	1 2	Arambagh .. Pandugram ..	Pandugram .. Badanganj ..	9·56 7·00	5,00,000 3,75,000	3,50,000 2,50,000
O	Ditto ..	Singur ..	Moshat ..	Following District Board road No. 80.	This road will afford connection between two adjacent east-west roads and two different railways. The inclusion is due only to the special desire of the District Board and subject to acceptance by the railway authorities.	1	Singur ..	Moshat ..	6·82	3,50,000	2,75,000
								Total ..	255·26	1,31,75,000	94,75,000

Appendix X.

Hooghly.

Rough estimates for the roads selected to form the scheme for improved roads in the district.

ESTIMATE No. 1.

Road No. A—Sub-section 1—Bally to Serampore.

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. — R.ft.	Replacement proposals in r.ft. — Type.
1	2	3	4	5	6	7
				Rs.		
(8) 1	..	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—3′ 0″ R. C. slab culvert	,,	120	..	
		1—1′ 8″ masonry culvert	No	No	3	1 ditto.
		1—2′ 0″ R. C. slab culvert	,,	,,	3	1 ditto.
2	..	1—0′ 6″ iron plate pipe culvert.	,,	,,	3	1 ditto.
		1—2′ 0″ R. C. slab culvert	,,	,,	3	1 ditto.
3	..	1—2′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
4	..	1—2′ 6″ ditto ..	,,	,,	3	1 ditto.
		1—3′ 0″ ditto ..	,,	120	..	
		1—2′ 0″ ditto ..	No	No	3	1 ditto.
		1—1′ 0″ ditto ..	,,	,,	3	1 ditto.
5	..	1—2′ 0″ R. C. slab culvert	,,	,,	3	1 ditto.
		1—10′ 2″ masonry culvert	,,	440	..	
		1—2′ 0″ R. C. slab culvert	No.	No	3	1 ditto.
(13) 6	..	1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—4′ 6″ masonry culvert	,,	200	..	
Total 6	..	41·25 r.ft. or 6·8 r.ft. per mile		840 or	36 21 57 or 9·5 r.ft. per mile.	

No extra allowance required.

Abstract of the above.

Constructing reinforced concrete pipe culverts	..	..	36
Reconditioning existing bridges and culverts	..	..	21
	Total	..	57 r.ft.

N.B.—The road is already up to B specification. So a separate statement for B specification is not shown

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
	R. ft.	Rs. Per r.ft.	Rs.		Rs.	Rs.
Constructing reinforced concrete pipe culverts.	36	300	10,800	..	..	..
Reconditioning existing bridges and culverts.	21	40	840	..	..	..
Total ..	..	..	11,640			
Say ..	..	..	**0·25 lakh.**			

ESTIMATE No. 2.

Road No. A—Sub-section 2—Serampore to Chinsurah.

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
				Rs.		
(14) 1	..	1 1′ 4″ iron plated culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
		1 2′ 2″ masonry culvert	,,	,,	3	1 ditto.
		1 2′ 6″ ditto ..	,,	120	..	
2	..	1 2′ 6″ ditto ..	,,	120	..	
		1—3′ 0″ ditto ..	,,	120	..	
		1 6′ 6″ ditto ..	,,	280	..	
3	..	1 6′ 0″ ditto ..	,,	240	..	
		1—4′ 11″ iron plated culvert	No	No	6	2 ditto.
4	.	1 3′ 11″ masonry culvert	,,	,,	6	2 ditto.
5	..	1—2′ 9″ ditto ..	,,	120	..	
		1—3′ 0″ ditto ..	,,	120	..	
		1 3′ 0″ ditto ..	,,	120	..	
		1—3′ 0″ ditto ..	,,	120	..	
6	..	1 2′ 6″ R. C. slab culvert	,,	120	..	
7	..	1—1′ 4″ masonry culvert	No	No	6	2 ditto.
8	..	1 2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1 1′ 0″ S. W. pipe culvert	,,	,,	6	2 ditto.
9	..	1—16′ 6″ arched masonry culvert.	,,	,,	20	Bridge.
		1 2′ 6″ ditto ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1 3′ 3′ ditto ..	,,	,,	6	2 ditto.
10	.	1 1′ 6′ ditto ..	,,	,,	3	1 ditto.
		1—1′ 6″ ditto ..	,,	,,	3	1 ditto.
		1 2′ 2′ ditto ..	,,	,,	3	1 ditto.
		1 1′ 6″ ditto ..	,,	,,	3	1 ditto.
		1—1′ 9″ ditto ..	,,	,,	3	1 ditto.
		1 1′ 6″ ditto ..	,,	,,	3	1 ditto.
(24) 11	.	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1 3′ 6″ ditto ..	,,	,,	6	2 ditto.
Total 11		93·08 r.ft. or 8·5 r.ft per mile		1,480 or	89 37	
				Total	126	or 11·5 r.ft. per mile.

No extra allowance required.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	.. ..	20
Constructing reinforced concrete pipe culverts	.. ..	69
Reconditioning existing bridges and culverts	.. ..	37
Total	..	126 r.ft.

N. B.—The road is already up to B specification. So a separate statement for B specification is not shown.

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
	R. ft.	Rs. Per r. ft.	Rs.		Rs.	Rs.
Constructing minor bridges of length up to 30 ft.	20	330	6,600	..	..	..
Constructing reinforced concrete pipe culverts.	69	300	20,700	..	..	..
Reconditioning existing bridges and culverts.	37	40	1,480	..	..	..
Total ..	..	..	27,780			
Say ..	..	..	**0·28 lakh.**			

ESTIMATE No. 3.

Road No. A—Sub-section 3—Chinsurah to Magra.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.		Land.		Embankment.										
		Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.		Rate for stone metal.	
					Above.	Below.								
		Ft.	Rs.	Ft.				Ft.	Ft.	Ft.	Rs.	a.	Rs.	a.
(25)	1	40	300	3·00	..	..	..	3	23	30	17	0	34	0
	2	50	300	2·50	..	..	..	3	26	32	17	0	33	0
	3	40	300	2·00	..	..	..	3	22	28	17	0	33	0
	4	27	300	1·00	..	..	..	3	16	19	17	0	34	0
	5	150	60	4·00	..	..	..	4	25	35	17	0	34	0
	6	150	60	3·00	..	..	..	3	24	32	17	0	33	0
	7	150	60	2·00	..	..	..	3	25	30	17	0	32	0
	8	150	60	4·00	..	..	..	7	25	45	18	0	33	0
	9	150	60	2·50	..	..	..	3	28	35	18	0	33	0
(34)	10	160	150	3·50	..	..	..	3	33	43	18	0	33	0
Total	10	1,067	1,650	30·5	..	..	..	35	247	329	173	0	332	0
Average	..	..	..	3·05	..	..	..	3·5	24·7	32·9	17	5	33	3
Say	..	..	..	..	..	..	..	4	..	..	19	0	35	0

Prevailing average rate for—		Rs.	a.			Rs.	a.
Earthwork ..	.. 1,000 c.ft.	6	8	Single brick soling 3"	.. ..	..	
Turfing ..	.. 1,000 s.ft.	3	8	Double brick soling 6"	.. 100 s.ft.	12	0
Brick-on-end edging	.. 100 r.ft.	8	0				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.		Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
						R.ft.	Type.
1		2	3	4	5	6	7
					Rs.		
(25)	1	3	1—4′ 0″ arched masonry culvert.	No	160	..	
			1—7′ 10″ ditto. ..	,,	No	9	3—3′ dia. R. C. pipe culvert.
	2	3	1—3′ 6″ ditto. ..	,,	160	..	
			1—1′ 2″ ditto. ..	No	No	3	1 ditto.
			1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—2′ 4″ ditto. ..	,,	,,	3	1 ditto.
	3	3	1—1′ 10″ ditto. ..	,,	,,	3	1 ditto.
			1—1′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
	4	3	1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—28′ 0″ arched masonry bridge	,,	,,	30	Bridge.
			1—2′ 0″ arched masonry culvert ..	,,	,,	3	1 3′ dia. R. C. pipe culvert.
	5	4	1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
			1—2′ 3″ ditto. ..	,,	,,	3	1 ditto.
			1—2′ 1″ ditto. ..	,,	,,	3	1 ditto.
			2—4′ 0″ R. C. slab culvert	,,	320	..	
	6	3	1—2′ 0″ arched masonry culvert ..	No	No	3	1 ditto.
	7	3	1—3′ 6″ ditto. ..	,,	160	..	
	8	7	1—81′ 0″ steel girder bridge.	,,	No	80	Bridge.
			1—7′ 7″ arched masonry culvert ..	,,	320	..	
			1—4′ 10″ ditto. ..	,,	200	..	
			1—8′ 3″ ditto. ..	,,	360	..	
			1—1′ 10″ R. C. slab culvert	,,	No	3	1—3′ dia. R. C. pipe culvert.
	9	3	1—2′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
			1—2′ 3″ R. C. slab culvert	,,	,,	3	1 ditto.
			1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
Carried over	..		186′ 6″		1,680	170	

Hooghly—Estimate No. 3—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
				Rs.		
Brought forward	..	186′ 6″		1,680	170	
(34) 10	3	1—4′ 0″ arched masonry culvert ..	No	160	..	
		1—157′ 0″ Kunti bridge ..	No	No	160	Bridge (excluded from total).
Total 10	..	190′ 6″ or 19·5 r.ft. per mile		1,840	170 or 46	
					216	or 21·6 r.ft. per mile.
		Bridges of over 100 ft. in length ..		..	160	
				Total ..	376	r.ft.

No extra allowance required.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	..	160
Constructing minor bridges of length above 30 ft.	..	..	80
Constructing minor bridges of length up to 30 ft.	..	..	30
Constructing reinforced concrete pipe culverts	..	..	60
Reconditioning existing bridges and culverts ..	..	..	46
	Total	..	376 r.ft.

N.B.—The road is already up to B specification. So a separate statement for B specification is not shown.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A.			Specification B.	
	Details.		Cost.	Details.	Cost.
			Rs.		Rs.
Land ..	....		..	....	..
Earthwork ..	....		..	....	..
Turfing ..	....		..	....	..
		R.ft.			
Edging ..	5,280′×2 =	10,560			
	At Rs. 8 per 100 r.ft.	..	845	....	..
		S.ft.			
Soling (10′−8′=2′)	5,280′×2′ =	10,560			
	At Rs. 12 per 100 s.ft.	..	1,267	....	..
Jhama metal ..	....		..	....	..
		C.ft.			
Stone metal ..	5,280′×2′×0′ 7″ =	6,160			
	Add for old surface to be picked up to 1 ft. on either side of the existing metalled road, 5,280′×2′×1½″=	1,320			
		7,480			
	At Rs. 35 per 100 c.ft.	..	2,618	....	..
		S.ft.			
Wearing course	5,280′×4′ =	21,120			
	At Rs. 11-2 per 100 s.ft.	..	2,349	....	..
Posts and pillars	40 nos. at Rs. 6 each	..	240	....	..
			7,319		
	Add contingencies at 7½ per cent. } *Add* tools and plant at 2½ per cent. }		732		
	Total	..	8,051		
	Say	..	[8,000		

Hooghly—Estimate No. 3—*concld.*

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A.			Specification B.		
	Quantity.	Rate.	Cost.	Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	8·0 miles.	8,000 per mile.	64,000	..	..	..
Constructing major bridges of length from 110 ft. to 300 ft.	160 r.ft.	(Under construction.)				
Constructing minor bridges of length above 30 ft.	80 r.ft.	(Taken up by C. & W. D.)				
Constructing minor bridges of length up to 30 ft.	30 r.ft.	330 per r.ft.	9,900	..	..	..
Constructing reinforced concrete pipe culverts	60 r.ft.	300 per r.ft.	18,000	..	..	..
Reconditioning existing bridges and culverts	46 r.ft.	40 per r.ft.	1,840	..	..	..
Total	..	..	93,740			
Say ..			**1·0 lakh.**			

ESTIMATE No. 4.

Road No. A—Sub-section 4—Magra to Pandua.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.				Ft.	Ft.		Rs.	Rs.
(35) 1	180	60	1·50	..	..	..	4	45	..	18	34
2	170	60	4·00	..	..	..	4	50	..	18	35
3	160	60	4·00	..	..	..	4	40	..	19	34
4	150	60	3·50	..	..	..	3	48	..	19	33
5	150	60	3·50	..	..	..	3	45	..	19	32
6	160	60	2·50	..	.	..	3	40	..	19	32
7	160	60	2·50	..	..	..	3	45	..	19	33
8	150	100	1·00	..	..	..	3	34	..	19	32
(43) 9	150	100	1·00	..	..	..	3	37	..	19	32
Total 9	1,430	620	26·5	..	..	..	30·0	384	..	169	297
Average ..	159	68·9	2·9	..	..	..	3·33	42·5	..	18·9	33
Say ..	..	70	3·0	..	..	..	4·0	42	..	19	35

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c. ft.	. 6 8	Single brick soling 3″		..	..
Turfing	..	1,000 s. ft.	.. 3 8	Double brick soling 6″	100	s. ft.	12 0
Brick-on-end edging	..	100 r. ft.	. 8 0				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.	Ft.		Rs.		
(35) 1	4	1—10′ 0″ arched masonry culvert.	No	400	.	
		1—3′ 0″ ditto. ..	,,	1,20	..	
2	4	Nil.				
3	4	1—3′ 0″ arched masonry culvert.	,,	120		
4	3	1—3′ 4″ ditto. ..	,,	160		
		1—10′ 3″ ditto. ..	No	No	15	Bridge.
5	3	1—2′ 0″ ditto. ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—3′ 0″ R. C. slab culvert	,,	,,	3	1 ditto.
		1—3′ 0″ ditto. ..	,,	120		
6	3	1—2′ 0″ ditto. ..	,,	No	3	1 ditto.
7	3	Nil.				
8	3	Nil.				
(43) 9	..	1—1′ 9″ R. C. slab culvert	No	No	3	1 ditto.
		1—10′ 0″ arched masonry culvert.	,,	,,	15	Bridge.
Total 6 miles excluding mileages having no bridges and culverts.		51·33 r. ft. or 8·5 r. ft. per mile.	..	920	42	
				or	23	
					65	or 10·8 r. ft. per mile.

No extra allowance required.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	30
Constructing reinforced concrete pipe culvert	..	12
Reconditioning existing bridges and culverts	..	23
Total	..	65 r. ft.

N. B.—The road is already up to B specification. So a separate statement for B specification is not shown.

Hooghly—Estimate No. 4—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	....	..	....	..
Earthwork ..	....	..	....	..
Turfing ..	....	..	....	..
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 9 per 100 r.ft.	950	....	..
Soling .. (10′—8′=2′).	5,280′ × 2′ = 10,560 s. ft. At Rs. 13 per 100 s. ft.	1,373	....	..
Jhama metal ..	....	..	....	..
Stone metal .. (10′—8′=2′).	5,280′ × 2′ × 7″ = 6,160 c. ft. For resectioning sides— 5,280′ × 2′ × 1½″ × 1,320 c. ft. —— 7,480 c. ft. At Rs. 35 per 100 c. ft.	2,618	....	..
Wearing course	5,280′ × 4′ = 21,120 s. ft. At Rs. 11-2 per 100 s. ft.	2,349	....	..
Posts and pillars	40 nos. at Rs. 6 each	240	....	..
		7,530		
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	753		
	Total ..	8,283		
	Say ..	8,500		

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	9·0 miles.	8,500 per mile.	76,500	..	..	..
Constructing minor bridges of length up to 30 ft.	30 r. ft.	330 per r. ft.	9,900	..	.	..
Constructing reinforced concrete pipe culverts	12 r. ft.	300 per r. ft.	3,600	..	..	..
Reconditioning existing bridges and culverts	23 r. ft.	40 per r. ft.	920	..	..	..
Total ..	..	..	90,990			
Say ..	..	..	**1·0 lakh.**			

ESTIMATE No. 5.

Road No. A—Sub-section 5—Pandua to Debipur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H.F.L.: Above.	Height above or below H.F.L.: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.				Ft.	Ft.	Ft.	Rs.	Rs.
(44) 1	155	65	1·50	..	..	..	3	41	..	20	32
2	155	65	2·00	..	..	..	3	35	..	20	32
3	150	65	3·00	..	..	..	3	40	..	20	30
4	150	65	3·00	..	..	..	3	38	..	20	32
5	170	65	3·50	..	..	..	3	38	..	20	32
6	150	65	2·00	..	..	..	3	38	..	20	32
7	150	55	2·00	..	..	..	3	43	..	20	32
(51) 8	160	55	2·50	..	..	..	3	43	..	20	32
Total 8	1,240	500	19·5	..	..	..	24	318	..	160	254
Average ..	155	62·5	2·4	..	..	..	3	39·7	..	20	32
Say ..	..	..	..	..	..	..	..	..	..	..	34

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c. ft.	.. 6 8	Single brick soling	3″	..	..
Turfing	..	1,000 s. ft.	.. 3 8	Double brick soiling	6″	100 s. ft.	12 0
Brick-on-end edging	..	100 r. ft.	.. 9 0				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.		Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type.
1		2	3	4	5	6	7
		Ft.			Rs.		
(44)	1	3	Nil.				
	2	3	1—1′ 6″ iron plate culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
			1—1′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—1′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
	3	3	1—1′ 8″ ditto. ..	,,	,,	3	1 ditto.
			1—1′ 6″ ditto. ..	,,	,,	3	1 ditto.
			1—3′ 0″ ditto- ..	,,	120		
	4	3	1—4′ 0″ ditto. ..	,,	160		
			1—1′ 0″ ditto. ..	No	No	3	1 ditto.
	5	3	1—3′ 0″ ditto. ..	,,	,,	3	1 ditto.
			1—10′ 0″ ditto. ..	,,	400		
	6	3	1—12′ 0″ ditto. ..	No	No	15	Bridge.
	7	3	1—4′ 0″ ditto. ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
(51)	8	3	1—8′ 0″ do. ..	,,	,,	9	3 ditto.
Total 7 miles excluding mileage having no bridge and culverts.		52·66 or 6·5 r. ft. per mile.			680	51	
					or	17	
					Total ..	68	or 9·7 r. ft. per mile.

No extra allowance required.

Abstract of the above.

Constructing minor bridges of lengths up to 30 ft.	..	15
Constructing reinforced concrete pipe culverts	..	36
Reconditioning existing bridges and culverts	..	17
Total	..	68 r.ft.

N. B.—The road is already up to B specification. So a separate statement for B specification is not shown.

Hooghly—Estimate No. 5—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	...	..	....	..
Earthwork ..	....	..	....	..
Turfing ..	....	..	....	..
Edging ..	5,280′×2 = 10,560 r. ft. At Rs. 9 per 100 r. ft.	950	....	..
Soling (10′−8′=2′).	5,280′×2′ = 10,560 s. ft. At Rs. 13 per 100 s. ft.	1,373	....	..
Jhama metal ..	....	..	....	..
Stone metal ..	5,280′×2′×7″ = 6,160 c. ft. For resectioning sides— 5,280′×2′×1½′ 1,320 „ ; 7,480 c. ft. At Rs. 34 per 100 c. ft.	2,543	....	.
Wearing course	5,280′×4′ = 21,120 s. ft. At Rs. 11-2 per 100 s. ft.	2,349	....	
Posts and pillars	40 nos. at Rs. 6 each	240	....	..
		7,455		
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	745		
	Total ..	8,200		
	Say ..	8,500		

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	8·0 miles.	8,500 per mile.	68,000	..	..	..
Constructing minor bridges of length up to 30 ft.	15 r. ft.	330 per r. ft.	4,950	..	..	..
Constructing reinforced concrete pipe culverts	36 r. ft.	300 per r. ft.	10,800	..	..	..
Reconditioning existing bridges and culverts	17 r. ft.	40 per r. ft.	680	..	..	..
Total ..	..	..	84,330			
Say ..	..	..	**0·75 lakh.**			

ESTIMATE No. 6.

Road No. B—Sub-section 1—Balgachi to Chanditola.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	31	100	2	1·00	..	..	3	21	31	20 0	38 5
2	24	150	1	0·50	..	..	3	16	24	20 0	39 5
Total 2	55	250	3	..	..	..	6	37	55	40 0	77 10
Average ..	27·5	125	1·50	..	..	..	3	18·50	27·50	20 0	38 13
Say ..	27	130	..	..	..	..	..	18	27	..	40 0

Analysis of rate of stone metal for 100 c.ft.

	Rs. a.
Cost of stone at quarry (Pakur)	5 8
Railway freight from Pakur to Baluhati R. S. (Baigachi)	22 15
Unloading	0 8
Loading in carts and stacking at road side	1 6
	30 5
Contractor's profit at Rs. 10 per 100	3 8
	33 13
Carting for 1st mile (2 miles carting)	4 8
	38 5

Re. 1-0 is added for extra mileage of carting.

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork ..	..	1,000 c.ft.	5 0	Single brick soling 3″	..	100 r.ft.	6 0
Turfing ..	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 r.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Part (2) (a) —Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3		4	5	6	7
	Ft.						
1	3	1 1′ 9″	arched masonry culvert.	No.	No.	3	1—3′ dia. R. C. pipe culvert.
2	3	2—5′ 3″ 1 10′ 6″ 21′ 0″	arched masonry bridge over Saraswati Khal.	„	„	25	Bridge.
		1—1′ 0″	pipe culvert	„	„	3	1—3′dia. R. C. pipe culvert.
Total 2	..	23·75 or 11·87 r.ft. per mile.		..	..	31 or 15·5 r.ft. per mile.	

Allowance of 20 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 2 (20′ − 15·5′) = 9′.

∴ R. C. pipe culvert, say	9
Minor bridges up to 30 ft.	Nil.
Total ..	40 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	25
Constructing reinforced concrete pipe culverts	15
Total ..	40 r.ft.

Hooghly—Estimate No. 6—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—1′ 9″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
2	3	2—5′ 3″ } arched masonry bridge over Saraswati Khal. 1—10′ 6″ } ——— 21′ 0″	,,	840		
		1—1′ 0″ pipe culvert ..	No	No	3	1 ditto.
Total 2	..	23·75 or 11·87 r.ft. per mile.	..	840	6	
				or ..	21	
					27 or 13·5 r.ft. per mile.	

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 100′ =	528,000		5,280′ × 100′ =	528,000	
	Deduct existing 5,280′ × 27′ =	142,560		*Deduct* existing 5,280′ × 27′ =	142,560	
		385,440			385,440	
	= 26·8 bighas at Rs. 130 per bigha		3,484	= 26·8 bighas at Rs. 130 per bigha		3,484
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117′ =	617,160		5,280′ × 108′ =	570,240	
	Deduct existing $5,280' \times \frac{18'+27'}{2} \times 1\cdot5' =$	17,820		*Deduct* existing $5,280' \times \frac{18'+27'}{2} \times 1\cdot5' =$	17,820	
		599,340			552,420	
	At Rs. 5 per 1,000 c.ft.		2,997	At Rs. 5 per 1,000 c.ft.		2,762
Carried over ..			6,481			6,246

Hooghly—Estimate No. 6—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		6,481		6,246
Turfing ..	S.ft. 5,280′ × 13·5′ = 71,280 At Rs. 3-8 per 1,000 s.ft.	250	S.ft. 5,280′ × 13·5′ = 71,280 At Rs. 3-8 per 1,000 s.ft.	250
Edging ..	R.ft. 5,280′ × 2′ = 10,560 At Rs. 5-8 per 100 r.ft.	581	R.ft. 5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r.ft.	581
Soling ..	S. ft. 5,280′ × 10′ = 52,800 At Rs. 11 per 100 s.ft.	5,808	S.ft. 5,280′ × 8′ = 42,240 At Rs. 6 per 100 s.ft.	2,534
Jhama metal ..	C.ft. 5,280′ × 10′ × 4″ 17,600 At Rs. 20 per 100 c.ft.	3,520	C.ft. 5,280′ × 8′ × 8″ = 28,160 At Rs. 20 per 100 c.ft.	5,632
Stone metal ..	C.ft. 5,280′ × 10′ × 3½″ = 15,400 At Rs. 40 per 100 c.ft.	6,160	....	..
Wearing course	S.ft. 5,280′ × 10′ = 52,800 At Rs. 11-2 per 100 s.ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each	240	40 nos. at Rs. 6 each	240
		28,914		15,483
	Add contingencies at 7½ per cent *Add* tools and plant at 2½ per cent.	2,891		1,548
	Total ..	31,805		17,031
	Say ..	32,000		17,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road.	2·0 miles.	32,000 per mile.	64,000	2·0 miles.	17,000 per mile.	34,000
Constructing minor bridges of length up to 30 ft.	25 r.ft.	330 per r.ft.	8,250	..	..	..
Constructing reinforced concrete pipe culverts.	15 r.ft.	300 per r.ft.	4,500	19 r.ft.	300 per r.ft.	5,700
Reconditioning existing bridges and culverts.	..	..	..	21 r.ft.	40 per r. ft.	840
Total ..	..	..	**76,750**	..	..	**40,540**
Say ..	..	..	**1·0 lakh.**	..	..	**0·50 lakh.**

ESTIMATE No. 7.

Road No. B—Sub-section 2—Chanditola to Sheakhala.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Exist-ing width.	Land. Cost per bigha.	Embankment. Exist-ing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Pro-posed height.	Exist-ing width of crest.	Exist-ing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.				Ft.	Ft.	Ft.	Rs.	Rs.
(11) 1	38	100	0·50	..	..	..	3	24, 25, 25.	34	18	35
2	63	100	2·25	..	..	..	3	24, 31, 26.	40, 44, 42.	18	35
3	85	100	3·50	..	..	..	4	24, 26, 26.	40, 45, 42.	18	35
4	61	100	1·75	..	..	..	3	24, 36, 26.	40, 41, 41.	18	35
5	43	75	1·50	..	..	..	3	24, 28, 26.	38	18	35
6	50	75	1·75	..	..	..	3	24, 29, 26.	40, 40, 40.	18	35
7	39	75	2·50	..	..	..	3	24, 28, 26.	39	18	35
8	36	75	2·25	..	..	..	3	24, 25, 25.	36	18	35
(18·5) (8·5) 9	43	75	3·25	..	..	..	4	22	39	18	35
Total 8·5	458	775	19·25	..	..	..	29	214, 228	346, 351	162	315
Average ..	51	86	2·14	..	..	..	3·22	24, 25	38, 39	18	35
Say ..	..	100	..	..	..	..	4	.. ..	..	..	..

Prevailing average rate for—

Item	Unit	Rs. a.	Item	Unit	Rs. a.
Earthwork ..	.. 1,000 c.ft.	5 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing ..	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 s.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	5 8			

Part (2)(a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
(11) 1	3	1—1′ 6″ arched masonry culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 3″ ditto ..	,,	,,	3	1 ditto.
		1—1′ 3″ ditto ..	,,	,,	3	1 ditto.
		1—1′ 6″ ditto ..	,,	,,	3	1 ditto.
		1—3′ 0″ ditto ..	,,	,,	3	1 ditto.
2	3	1—3′ 0′ ditto ..	,,	,,	3	1 ditto.
		1—1′ 6″ ditto ..	,,	,,	3	1 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—3′ 0″ arched masonry culvert ..	,,	,,	3	1 ditto.
3	4	1—3′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—11′ 3″ plank topped bridge ..	,,	,,	12	3—4′ ditto.
		1—5′ 0″ ditto ..	,,	,,	6	2—3′ ditto.
		1—8′ 0″ ditto ..	,,	,,	9	3—3′ ditto.
		1—2′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—4′ 0″ arched masonry culvert ..	,,	,,	4	1—4′ ditto.
4	3	1—2′ 0″ pipe culvert ..	,,	,,	3	1—3′ ditto.
5	3	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 9″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 3″ plank topped culvert ..	,,	,,	3	1 ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
		2—6′ 0″ arched masonry culvert ..	,,	,,	15	Bridge.
		1—12′ 0″ ditto ..	,,	,,	15	Ditto.
Carried over ..		89′ 9″			115	

Hooghly—Estimate No. 7—*contd.*

Mileage.		Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1		2	3	4	5	6	7
		Ft.			Rs.		
Brought forward ..			89′ 9″			115	
(16)	6	3	1—1′ 6″ pipe culvert ..	No.	No.	3	1—3′ dia. R. C. pipe culvert.
			1—2′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
			1—10′ 0″ plank topped culvert ..	„	„	15	Bridge.
			1—3′ 9″ arched masonry culvert ..	„	„	3	1—3′ dia. R. C. pipe culvert.
(17)	7	3	1—4′ 0″ ditto ..	„	„	3	1—3′ ditto.
			1—9′ 6″ R. C. slab culvert	„	„	9	3 ditto.
			1—3′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
	8	3	1—4′ 0″ ditto ..	„	„	6	2 ditto.
			1—2′ 0″ pipe culvert ..	„	„	3	1 ditto.
			1—4′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
(18·50) (8·50)		4	1—3′ 0″ plank topped culvert ..	„	„	3	1 ditto.
Total 8·50			137·50 or 16·17 r.ft. per mile.			169	or 19·94 r.ft. per mile.

Allowance of 21·65 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culvert and minor bridges of length up to 30 ft. = 8·5 × (21·65′ − 19·94′) = 14·53 r.ft.

∴ R. C. pipe culvert = ¼ × 14·53 = 3·63, say ..	..	4
Minor bridges up to 30 ft. = ¾ × 14·53 = 10·89, say	..	15
Total	..	188 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	..	60
Constructing reinforced concrete pipe culverts ..	..	128
Total	..	188 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.		Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1		2	3	4	5	6	7
		Ft.			Rs.		
(11)	1	3	1—1′ 6″ arched masonry culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
			1—2′ 3″ ditto ..	„	„	3	1 ditto.
			1—1′ 3″ ditto ..	„	„	3	1 ditto.
			1—1′ 6″ ditto ..	„	„	3	1 ditto.
			1—3′ 0″ ditto ..	„	120	..	
	2	3	1—3′ 0″ ditto ..	„	120	..	
			1—1′ 6″ ditto ..	„	No	3	1 ditto.
			1—1′ 0″ pipe culvert ..	„	„	3	1 ditto.
			1—3′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
Carried over ..							

Hooghly—Estimate No. 7—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward ..						
3	4	1—3′ 0″ arched masonry culvert ..	No	120	..	
		1—11′ 3″ plank topped culvert ..	,,	No	12	3—4′ dia. R. C. pipe culvert.
		1—5′ 0″ ditto ..	,,	,,	6	2—3′ ditto.
		1—8′ 0″ ditto ..	,,	320	..	
		1—2′ 0″ pipe culvert ..	,,	No	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—4′ 0″ arched masonry culvert ..	,,	,,	4	1—4′ ditto.
4	3	1—2′ 0″ pipe culvert ..	,,	,,	3	1—3′ dtito.
5	3	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 9″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 3″ plank topped culvert ..	,,	,,	3	1 ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
		2—6′ 0″ arched masonry culvert ..	,,	480	..	
		1—12′ 0″ ditto ..	,,	480	..	
(16) 6	3	1—1′ 6″ pipe culvert ..	,,	No	3	1 ditto.
		1—2′ 0″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—10′ 0″ plank topped culvert ..	,,	,,	15	Bridge.
		1—3′ 9″ arched masonry culvert ..	,,	160	..	
7	3	1—4′ 0″ ditto ..	,,	160	..	
		1—9′ 6″ R. C. slab culvert	,,	400	..	
		1—3′ 0″ arched masonry culvert ..	,,	No	3	1 3′ dia. R. C. pipe culvert.
8	3	1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—4′ 0″ arched masonry culvert ..	,,	160	..	
(8·5) 9	4	1—3′ 0″ plank topped culvert ..	,,	No	3	1 ditto.
Total 8·5		137·5 or 16·17 r.ft. per mile.		2,520	100 or 63	
					163 or 19·17 r.ft. per mile.	

Allowance of 21·3 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 8·5 × (21·3′ − 19·17′) = 18 r.ft.

∴ R. C. pipe culverts = ¼ × 18′ = 4·5 r.ft., say ..	..	4
Minor bridges up to 30 ft. = ¾ × 18′ = 13·5 r.ft., say ..	..	15
Total	..	182 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	30
Constructing reinforced concrete pipe culverts ..	..	89
Reconditioning existing bridges and culverts ..	..	63
Total	..	182 r.ft.

Hooghly—Estimate No. 7—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 51′ ..	269,280		*Deduct* existing— 5,280′ × 51′ =	269,280	
		322,080			322,080	
	22·37 bighas at Rs. 100 per bigha ..		2,237	=22·37 bighas at Rs. 100 per bigha ..		2,237
		C.ft.			C.ft.	
Earthwork	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— 5,280′ × $\frac{25' + 39'}{2}$ × 2·14′ =	361,574		*Deduct* existing— 5,280′ × $\frac{24' + 38'}{2}$ × 2·14′ =	350,275	
		488,506			441,725	
	At Rs. 5 per 1,000 c.ft. ..		2,442	At Rs. 5 per 1,000 c.ft. ..		2,208
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft. ..		333	At Rs. 3-8 per 1,000 s.ft. ..		333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft. ..		5,808	At Rs. 6 per 100 s.ft. ..		2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 18 per 100 c.ft. ..		3,168	At Rs. 18 per 100 c.ft. ..		5,069
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 35 per 100 c.ft. ..		5,390	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			26,073			13,202
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,607			1,320
	Total ..		28,680			14,522
	Say ..		29,000			14,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	8·50 miles.	29,000 per mile.	2,46,500	8·50 miles.	14,500 per mile.	1,23,250
Constructing minor bridges of length up to 30 ft.	60 r.ft.	330 per r.ft.	19,800	30 r.ft.	330 per r.ft.	9,900
Constructing reinforced concrete pipe culverts	125 r.ft.	300 per r.ft.	37,500	89 r.ft.	300 per r.ft.	26,700
Reconditioning existing bridges and culverts	..	..	..	63 r.ft.	40 per r.ft.	2,520
Total ..	..	..	3,03,800			1,62,370
Say ..			3·25 lakhs.			1·75 lakhs.

ESTIMATE No. 8.

Road No. B—Sub-section 3—Sheakhala to Sepahigachi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H.F.L.: Above.	Height above or below H.F.L.: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.				Ft.	Ft.	Ft.	Rs.	Rs.
(18·5) 1	43	75	3·25	..	..	..	4	22	39	18	35
2	50	75	4·50	..	..	..	5	18	40, 42, 42	18	35
3	50	75	2·75	..	..	..	3	22	38	18	35
(22) 3·5	54	75	2·50	..	..	..	3	24, 26, 26	38	18	35
Total 3·5	197	300	13·00	..	..	..	15	86, 88	155, 157	72	140
Average..	49	75	3·25	..	..	..	3·75	22, 22	39, 39	18	35
Say ..	..	100	..	..	..	..	4·00	.. ..	.. ..	..	..

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	.. 1,000 c.ft.	5 0	Single brick soling 3"	.. 100 s.ft.	6 0
Turfing ..	.. 1,000 s.ft.	3 8	Double brick soling 6"	.. 100 s.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
(18·5) 1	4	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	„	„	4	1—4′ ditto.
2	5	1—2′ 0″ ditto ..	„	„	3	1—3′ ditto.
		1—3′ 6″ ditto ..	„	„	4	1—4′ ditto.
3	3	1—4′ 0″ ditto ..	„	„	3	1—3′ ditto.
		1—3′ 0″ plank-topped culvert.	„	„	3	1 ditto.
(22) 3·5	3	1—3′ 0″ arched masonry culvert.	„	„	3	1 ditto.
		1—4′ 0″ ditto ..	„	„	3	1 ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
		1—5′ 0″ ditto ..	„	„	6	2 ditto.
Total 3·5	..	32·5 or 9·29 r.ft. per mile			35	or 10 r.ft. per mile.

Allowance of 23·14 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 3\cdot5' \times (23\cdot14' - 10') = 46$ r.ft.

∴ R. C. pipe culverts $= \frac{1}{4} \times 46 = 11\cdot5$, say 12

Minor bridges up to 30 ft. $= \frac{3}{4} \times 46 = 34\cdot5$, say 35

Total .. 82 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	..	35
Constructing reinforced concrete pipe culverts	..	..	47
	Total	..	82 r.ft.

Hooghly—Estimate No. 8—*contd.*

Part (2)(b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
(18·5) 1	4	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	"	160	..	
2	5	1—2′ 0″ ditto ..	"	No	3	1′ ditto.
		1—3″ 6″ ditto ..	"	"	3	1′ ditto.
3	3	1—4′ 0″ ditto .	"	"	3	1′ ditto.
		1—3′ 0″ plank-topped culvert.	"	"	3	1′ ditto.
(22) (3·5)	3	1—3′ 0″ arched masonry culvert.	"	"	3	1′ ditto.
		1—4′ 0″ ditto ..	"	"	3	1′ ditto.
		1—2′ 0″ ditto ..	"	"	3	1′ ditto.
		1—5′ 0″ ditto ..	"	"	6	2′ ditto.
Total 3·5		32·5 or 9·29 r.ft. per mile	..	160 or	30 4 34	or 9·71 r.ft. per mile.

Allowance of 22·86 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft.—3·5′ × (22·86′ − 9·71′) = 46 r.ft.

∴ R. C. pipe culverts = ¼ × 46 = 11·50 r.ft., say 12

Minor bridges up to 30 ft. = ¾ × 46 = 34·5, say 35

Total .. 81 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	35	
Constructing reinforced concrete pipe culverts	42	
Reconditioning existing bridges and culverts	4	
Total ..	81	r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 49′ =	258,720		*Deduct* existing— 5,280′ × 49′ =	258,720	
		332,640			332,640	
	= 23·1 bighas. At Rs. 100 per bigha ..		2,310	= 23·1 bighas. At Rs. 100 per bigha ..		2,310
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— $5,280' \times \frac{22'+39'}{2} \times 3\cdot25'$ =	523,380		*Deduct* existing— $5,280' \times \frac{22'+39'}{2} \times 32\cdot5''$ =	523,380	
		326,700			268,620	
	At Rs. 5 per 1,000 c.ft. ..		1,634	At Rs. 5 per 1,000 c.ft. ..		1,343
Carried over ..			3,944			3,653

Hooghly—Estimate No. 8—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought forward ..			3,944			3,653
		S.ft.			S.ft.	
Turfing ..	5 280′ × 18′ =	95 040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft.		333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S. ft.			S. ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 18 per 100 c.ft.	..	3,168	At Rs. 18 per 100 c.ft.	..	5,069
		C. ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 35 per 100 c.ft.	..	5,390	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			25,338			12,410
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,534			1,241
	Total	..	27,872			13,651
	Say	..	28,000			14,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	3·50 miles.	28,000 per mile.	98,000	3·50 miles.	14,000 per mile.	49,000
Constructing minor bridges of length up to 30 ft.	35 r.ft.	330 per r.ft.	11,550	35 r.ft.	330 per r.ft.	11,550
Constructing reinforced concrete pipe culverts.	47 r.ft.	300 per r.ft.	14,100	42 r.ft.	300 per r.ft.	12,600
Reconditioning existing bridges and culverts.	..	..	..	4 r.ft.	40 per r.ft.	160
Total ..	..	..	1,23,650	..	..	73,310
Say ..	..	..	**1·25 lakhs.**	..	..	**0·75 lakh.**

ESTIMATE No. 9.

Road No. B—Sub-section 4—Haripal to Sepahigachi.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.								
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	24	150	1·75	1·25	..	..	3	11	17	15 0	35 4
2	30	175	1·25	0·75	..	..	3	19	22	15 0	36 8
3	55	100	3·75	2·75	..	..	3	27	46	15 0	37 8
(4) 3 3	200	100	3·50	2·00	..	.	3	27	48	15 0	38 8
Total 3·3	309	525	10·25	..	..	.	12	84	133	60 0	147 12
Average	77·25	131·25	2·53	..	..	..	3	21	33·25	15 0	36 15
Say ..	77	135	2·5	..	..	..	..	..	33	..	40 0

Analysis of rate of stone metal for 100 c. ft.

	Rs. a.
Cost of stone at Pakur	5 8
Railway freight from Pakur to Haripal	15 12
Unloading from wagon	2 0
Stacking at road side	0 8
Consolidation	6 0
	29 12
Contractor's profit at 10 per cent.	2 15
Say ..	32 12
Carting for 1st mile	2 8
	35 4
Carting for 2nd mile	1 4
	36 8

Re. 1-0 is added for extra mileage of carting.

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork ..	1,000 c. ft.	5 0	Single brick soling 3″ ..	100 s. ft.	6 0
Turfing	1,000 s. ft.	3 8	Double brick soling 6″ ..	100 s. ft.	11 0
Brick-on-end edging	100 r. ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—0′ 9″ pipe culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—5′ 0″ arched masonry culvert ..	„	„	6	2 ditto.
		1—1′ 0″ pipe culvert	„	„	3	1 ditto.
		1—1′ 0″ ditto ..	„	„	3	1 ditto.
2	3	1—2′ 9″ arched masonry culvert ..	„	„	3	1 ditto.
		1—2′ 9″ plank topped culvert ..	„	„	3	1 ditto.
		1—1′ 0″ pipe culvert	„	„	3	1 ditto.
		1—2′ 6″ arched masonry culvert ..	„	„	3	1 ditto.
		1—2′ 9″ ditto ..	„	„	3	1 ditto.
Carried over ..		19′ 6″			30	

Hooghly—Estimate No. 9—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		19′ 6″			30	
3	3	1—12′ 0″ arched masonry culvert ..	No	No	15	Bridge.
		2—12′ 0″ ditto. ..	,,	,,	25	ditto.
		1—9′ 9″ plank-topped culvert ..	,,	,,	15	ditto.
(4) 3·3	3	1—4′ 0″ arched masonry culvert ..	,,	,,	4	1—4′ dia. R. C. pipe culvert.
Total 3·3	..	69′ 3″ r.ft.	..	..	89	or 27 r. ft. per mile.

Allowance of 30 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.
Extra provision for R. C. pipe culverts and bridges of length up to 30 ft. = 4 × (30′ − 27′) = 12 r. ft.

∴ R. C. pipe culverts		Nil
Minor bridges of length up to 30 ft., say		15
	Total ..	104 r. ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	70
Constructing reinforced concrete pipe culverts	..	34
	Total ..	104 r. ft.

Part (2) (*b*) *Details of existing bridges and proposals for improvement as per specification B.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—0′ 9″ pipe culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—5′ 0″ arched masonry culvert ..	,,	200		
		1—1′ 0″ pipe culvert	,,	No	3	1 ditto.
		1—1′ 0″ ditto. ..	,,	,,	3	1 ditto.
2	3	1—2′ 9″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 9″ plank-topped culvert ..	,,	,,	3	1 ditto.
		1—1′ 0″ pipe culvert	,,	,,	3	1 ditto.
		1—2′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 9″ ditto. ..	,,	,,	3	1 ditto.
3	3	1—12′ 0″ ditto. ..	,,	480		
		2—12′ 0″ ditto. ..	,,	960		
		1—9′ 9″ plank-topped culvert ..	,,	No	15	Bridge.
(4) 3·3	3	1—4′ 0″ arched masonry culvert ..	,,	160		
Total 3·3	..	69′ 3″ r.ft.	..	1,800 or	39 45	
					84	or 25·4 r.ft. per mile.

Allowance of 30 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 4 × (30′ − 25·4′) = 18·4 r. ft.

∴ R. C. pipe culverts = ¼ × 18·4 = 4·6 r. ft., say	..	4
Minor bridges up to 30 ft. = ¾ × 18·4 = 13·8 r. ft., say		15
	Total ..	103 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	30
Constructing reinforced concrete pipe culverts	..	28
Reconditioning existing bridges and culverts ..	..	45
	Total ..	103 r. ft.

Hooghly—Estimate No. 9—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 100′ =	528,000		5,280′ × 100′ =	528,000	
	Deduct existing— 5,280′ × 77′ =	406,560		*Deduct* existing— 5,280′ × 77′ =	406,560	
		121,440			121,440	
	= 8·41 bighas at Rs. 135 per bigha ..		1,135	= 8·41 bighas at Rs. 135 per bigha ..		1,135
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 117′ =	617,160		5,280′ × 108′ =	570,240	
	Deduct existing— $5{,}280' \times \frac{21' + 33'}{2} \times 2{\cdot}5' =$	356,400		*Deduct* existing— $5{,}280' \times \frac{21' + 33'}{2} \times 2{\cdot}5' =$	356,400	
		260,760			213,840	
	At Rs. 5 per 1,000 c. ft. ..		1,304	At Rs. 5 per 1,000 c. ft. ..		1,069
	S. ft.			S. ft.		
Turfing ..	5,280′ × 13·5′ = 71,280 At Rs. 3-8 per 1,000 s. ft.		250	5,280′ × 13·5′ = 71,280 At Rs. 3-8 per 1,000 s. ft.		250
	R. ft.			R. ft.		
Edging ..	5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r. ft. ..		581	5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r. ft. ..		581
	S. ft.			S. ft.		
Soling ..	5,280′ × 10′ = 52,800 At Rs. 11 per 100 s. ft. ..		5,808	5,280′ × 8′ = 42,240 At Rs. 6 per 100 s. ft. ..		2,534
	C. ft.			C. ft.		
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 At Rs. 15 per 100 c. ft. ..		2,640	5,280′ × 8′ × 8″ = 28,160 At Rs. 15 per 100 c. ft. ..		4,224
	C. ft.					
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 At Rs. 40 per 100 c. ft. ..		6,160	....		..
	S. ft.					
Wearing course	5,280′ × 10′ = 52,800 At Rs. 11-2 per 100 s. ft.		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			23,992			10,033
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,399			1,003
	Total ..		26,391			11,036
	Say ..		26,500			11,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	3·30 miles.	26,500 per mile.	87,450	3·30 miles.	11,000 per mile.	36,300
Constructing minor bridges of length up to 30 ft.	70 r. ft.	330 per r. ft.	23,100	30 r. ft.	330 per r. ft.	9,900
Constructing reinforced concrete pipe culverts	34 r. ft.	300 per r. ft.	10,200	28 r. ft.	300 per r. ft.	8,400
Reconditioning existing bridges and culverts	..	..	..	45 r. ft.	40 per r. ft.	1,800
Total ..	..	..	1,20,750	..	..	56,400
Say ..			1·25 lakhs.			0·75 lakh.

ESTIMATE No. 10.

Road No. B -Sub-section 5—Haripal to Dhaniakhali.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs. a.
1	79·00	100	4·00	1·75	..	..	4	15·50	40·00	15	35 4
2	64·00	100	2·75	1·25	..	..	4	15·25	31·75	15	36 8
3	50·75	100	2·00	1·00	..	..	3	15·00	26·25	15	37 8
4	79·25	100	3·00	1·00	..	..	4	14·75	34·75	15	38 8
5	63·75	100	2·75	1·25	..	..	4	14·50	27·75	15	39 8
6	61·00	100	2·25	0·75	..	..	4	13·75	29·00	15	39 8
7	8·00	100	..	2·00	..	..	3	6·00	6·00	15	38 8
8	15·00	100	3·00	2·00	..	..	3	11·00	15·00	15	37 8
9	15·00	100	3·00	2·00	..	..	3	13·00	15·00	15	36 8
9·5	20·00	100	3·00	2·00	..	..	3	10·00	16·00	15	35 4
Total 9·5	455·75	1,000	25·75	..	..	..	35	128·75	241·50	150	374 8
Average..	45	100	2·5	..	..	..	3·5	12·87	24·15	15	37 7
Say ..	..	..	..	..	..	..	4	13	24	..	38 0

Analysis of rate of stone metal for 100 c.ft.

	Rs. a.
Cost of stone at Pakur	5 8
Railway freight from Pakur to Haripal ..	15 12
Unloading, etc.	2 0
Stacking	0 8
Consolidation	6 0
	29 12
Contractor's profit at 10 per cent.	2 15
Say ..	32 12
Carting for 1st mile	2 8
	35 4
Carting for 2nd mile	1 4
	36 8

Re. 1 is added for extra mileage of carting.

Prevailing average rate for

		Rs. a.			Rs. a.
Earthwork	1,000 c.ft.	5 0	Single brick soling 3″	100 s.ft.	6 0
Turfing	1,000 s.ft.	2 8	Double brick soling 6″	100 s.ft.	11 0
Brick-on-end edging	100 r.ft.	3 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
		..		Rs.		
	Ft.					
1	4	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		2—9′ 7″ plank-topped culvert.	,,	,,	20	Bridge.
2	4	1—1′ 9″ pipe culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
		1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
3	3	2—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
		1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
		1—24′ 9″ R. C. bridge ..	,,	,,	25	Bridge.
4	4	2—9′ 7″ plank-topped culvert	,,	,,	20	Ditto.
		1—1′ 9″ pipe culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		2—7′ 6″ arched masonry culvert.	,,	,,	15	Bridge.
Carried over		92′ 4″			101	

Hooghly—Estimate No. 10.—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft.	
					R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		92′ 4″			101	
5	4	1—9′ 6″ plank-topped culvert	No.	No.	15	Bridge.
		1—1′ 9″ pipe culvert ..	„	„	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 9″ ditto. ..	„	„	3	1 ditto.
		1—1′ 9″ ditto. ..	„	„	3	1 ditto.
6	4	1—1′ 9″ ditto. ..	„	„	3	1 ditto.
		1—9′ 6″ plank-topped culvert	„	„	15	Bridge.
7	3	2—2′ 0″ pipe culvert ..	„	„	6	2—3′ dia. R. C. pipe culvert.
		1—8′ 0″ plank-topped culvert.	„	„	15	Bridge.
8	3	2—5′ 0″ 1—3′ 6″ 13′ 6″ } plank-topped with masonry abutment bridge.	„	„	15	ditto.
9	3	2—2′ 0″ pipe culvert ..	„	„	6	2—3′ dia. R. C. pipe culvert.
		2—4′ 0″ plank-topped masonry culvert.	„	„	9	3 ditto.
9·5	3	1—6′ 0″ ditto. ..	„	„	6	2′ ditto.
		2—6′ 0″ arched masonry culvert.	„	„	15	Bridge.
Total 9·5	..	173·82 or 18·3 r.ft. per mile.	..	..	215	or 22·6 r.ft. per mile.

Allowance of 25 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. 9·5′ (25′ – 22·6′) = 22·8′, say 24 r.ft.

∴ R. C. pipe culvert—¼ × 24 = 6 r.ft. ..	..	6
Minor bridges up to 30 r.ft. — ¾ × 24 = 18 r. ft., say	..	20
Total	..	241 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	175
Constructing reinforced concrete pipe culverts	..	66
Total	..	241 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft.	
					R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	4	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		2—9′ 7″ plank-topped culvert	„	800		
2	4	1—1′ 9″ pipe culvert ..	„	No	3	1 ditto.
		1—1′ 9″ ditto. ..	„	„	3	1 ditto.
		1—1′ 9″ ditto. ..	„	„	3	1 ditto.
3	3	2—1′ 9″ ditto. ..	„	„	3	1 ditto.
		1—1′ 9″ ditto. ..	„	„	3	1 ditto.
		1—24′ 9″ R. C. bridge ..	„	1,000		
4	4	2—9′ 7″ plank-topped culvert.	„	800		
		1—1′ 9″ pipe culvert ..	„	No	3	1 ditto.
		2—7′ 6″ arched masonry culvert.	„	600		
Carried over		92′ 4″		3,200	21	

Hooghly—Estimate No. 10.—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		92′ 4″		3,200	21	
5	4	1—9′ 6″ plank-topped culvert.	No	No	15	Bridge.
		1—1′ 9″ pipe culvert ..	,,	,,	3	1 -3′ dia. R. C. pipe culvert.
		1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
		1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
6	4	1—1′ 9″ ditto. ..	,,	,,	3	1 ditto.
		1—9′ 6″ plank-topped culvert.	,,	,,	15	Bridge.
7	3	2—2′ 0″ pipe culvert ..	,,	,,	6	2-3′ dia. R. C. pipe culvert.
		1—8′ 0″ plank-topped culvert.	,,	,,	15	Bridge.
8	3	2—5′ 0″ } 1—3′ 6″ } 13′ 6″ } plank-topped with masonry abutment bridge.	,,	,,	15	Ditto.
9	3	2—2′ 0″ pipe culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert
		2—4′ 0″ plank-topped masonry culvert.	,,	,,	9	3′ ditto.
9·5	3	1—6′ 0″ ditto. ..	,,	,,	6	2′ ditto.
		2—6′ 0″ arched masonry culvert.		480		
Total 9·5	..	173·82 or 18·3 r.ft. per mile.		3,680	120 or 92	
					212 or 22·31 r.ft. per mile.	

Allowance of 25 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft.—9·5 (25′—22·31′)—25·56′, say 26′.

∴ R. C. pipe culverts = ¼ × 26 = 6·5, say	..	9
Minor bridges up to 30 ft. = ¾ × 26 = 19·5, say	..	20
Total	..	241 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	80
Constructing reinforced concrete pipe culverts	..	69
Reconditioning existing bridges and culverts	..	92
Total	..	241 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 45′ =	237,600		*Deduct* existing— 5,280′ × 45′ =	237,600	
		353,760			353,760	
	= 24·6 bighas at Rs.100 per bigha		2,460	= 24·6 bighas at Rs.100 per bigha		2,460
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— $5{,}280' \times \frac{13'+24'}{2} \times 2\cdot5' =$	244,200		*Deduct* existing— $5{,}280' \times \frac{13'+24'}{2} \times 2\cdot5' =$	244,200	
		605,880			547,800	
	At Rs. 5 per 100 c.ft.		3,029	At Rs. 5 per 1,000 c.ft.		2,739
Carried over ..			5,489			5,199

Hooghly—Estimate No. 10—*contd.*

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
			Rs.			Rs.
Brought forward			5,489			5,199
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 2-8 per 1,000 s.ft.		238	At Rs. 2-8 per 1,000 s.ft.		238
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 3-8 per 100 r.ft.		370	At Rs. 3-8 per 100 r.ft.		370
		S.ft.				
Soling ..	5,280′ × 6′	31,680		....		..
	At Rs. 11 per 100 s.ft.		3,485			
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 15 per 100 c.ft.		2,640	At Rs. 15 per 100 c.ft.		4,224
		C. ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400		....		..
	Deduct 1″ available from 2½″ stone metal 5,280′ × 8′ × 1″ =	3,520				
		118,800				
	At Rs. 38 per 100 c.ft.		4,514			
		S.ft.				
Wearing course	5,280′ × 10′	52,800				
	At Rs. 11-2 per 100 s.ft.		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			22,850			10,271
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,285			1,027
	Total	..	25,135			11,298
	Say	..	25,500		..	11,500

(b) *Existing unmetalled road.*

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
		S.ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing—5,280′ × 45′ =	237,600		*Deduct* existing—5,280′ × 45′ =	237,600	
		353,760			353,760	
	=24·6 bighas at Rs. 100 per bigha		2,460	=24·6 bighas at Rs. 100 per bigha		2,460
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing—$5{,}280' \times \frac{13'+24'}{2} \times 2\cdot5'$ =	244,200		*Deduct* existing—$5{,}280' \times \frac{13'+24'}{2} \times 2\cdot5'$ =	244,200	
		605,880			547,800	
	At Rs. 5 per 1,000 c.ft.	..	3,029	At Rs. 5 per 1,000 c.ft.	..	2,739
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 2-8 per 1,000 s.ft.	..	238	At Rs. 2-8 per 1,000 s.ft.	..	238
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 3-8 per 100 r.ft.	..	370	At Rs. 3-8 per 100 r.ft.	..	370
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
Carried over ..			11,905			8,341

Hooghly—Estimate No. 10—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought forward			11,905			8,341
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 15 per 100 c.ft.	..	2,640	At Rs. 15 per 100 c.ft.	..	4,224
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400		....		..
	At Rs. 38 per 100 c.ft.	..	5,852			
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11·2 per 100 s.ft.	..	5,874			
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			26,511			12,805
	Add contingencies at 7½ per cent. } *Add* tolls and plant at 2½ per cent. }		2,651			1,281
	Total	..	29,162			14,086
	Say	..	29,500			14,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	6·0 miles.	25,500 per mile.	1,53,000	6·0 miles.	11,500 per mile.	69,000
Improving existing unmetalled road ..	3·5 miles.	29,500 per mile.	1,03,250	3·5 miles.	14,000 per mile.	49,000
Constructing minor bridges of length up to 30 ft.	175 r.ft.	330 per r.ft.	57,750	80 r.ft.	330 per r.ft.	26,400
Constructing reinforced concrete pipe culverts.	66 r.ft.	300 per r.ft.	19,800	69 r.ft.	300 per r.ft.	20,700
Reconditioning existing bridges and culverts.	..	..	..	92 r.ft.	40 r.ft.	3,680
Total ..			3,33,800			1,68,780
Say ..			**3·50 lakhs.**			**1·75 lakhs.**

ESTIMATE No. 11.

Road No. 8—Sub-section 6—Dhaniakhali to Keatara.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	21	100	2·00	1	..	..	3	12	17	20 0	44 7
2	18	100	3·00	2	..	..	3	12	18	22 0	45 7
3	30	30	2·50	2	..	..	3	12	18	23 0	46 7
4	30	30	2·50	2	..	..	3	12	21	23 12	47 7
5	32	75	2·00	1	..	..	3	12	28	24 8	48 7
6	15	150	2·00	.	..	..	4	8	15	25 4	49 7
Total 6	146	485	14·00	..	..	..	19	68	117	138 8	281 10
Average ..	24·33	80·8	2·30	..	..	..	3·16	11·3	19·4	23 1	46 15
Say ..	24	100	..	..	..	..	4	11	19	25 0	50 0

Analysis of rate of stone metal for 100 c. ft.

	Rs. a.
Cost of stone at Pakur	5 8
Railway freight from Pakur to Haripal ..	15 12
Unloading, etc.	2 0
Stacking	0 8
Consolidation	6 0
	29 12
Contractor's profit at 10 per cent. ..	2 15
	32 11
Carting up to 1st mile (10 miles carting from Haripal)	11 12
	44 7

Rates of carting.

		Rs. a.
1st mile	..	2 8
2nd mile	..	1 4
3rd mile	..	1 0

Re. 1 is added per extra mileage of carting.

Prevailing average rate for

			Rs. a.
Earthwork	..	1,000 c.ft.	5 0
Turfing ..	.	1,000 s.ft.	3 8
Brick on-end edging	..	100 r.ft.	6 0
Single brick soling 3″	..	100 s.ft.	6 0
Double brick soling 6″	..	100 s.ft.	11 0

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	Nil.				
2	3	2—3′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
		1—1′ 6″ ditto. ..	,,	,,	3	1 ditto.
3	3	1—3′ 9″ arched masonry culvert.	,,	,,	4	1—4′ ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1—3′ ditto.
		1—6′ 0″ arched masonry culvert.	,,	,,	6	2 ditto.
4	3	1—4′ 0″ ditto. ..	,,	,,	4	1—4′ ditto.
5	3	1—1′ 6″ pipe culvert ..	,,	,,	3	1—3′ ditto.
		1—1′ 6″ ditto. ..	,,	,,	3	1 ditto.
		1—7′ 9″ plank-topped culvert.	,,	,,	8	2—4′ ditto.
		1—2′ 0″ pipe culvert ..	,,	,,	3	1—3′ ditto.
		1 1′ 0″ ditto. ..	,,	,,	3	1 ditto.
Carried over ..		38′ 0″			49	

Hooghly—Estimate No. 11.—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward ..		38′ 0″			49	
6	4	2—1′ 6″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto. ..	"	"	3	1 ditto.
		1—1′ 0″ ditto. ..	"	"	3	1 ditto.
		1—2′ 9″ arched masonry culvert	"	"	3	1 ditto.
		1—1′ 0″ ditto. ..	"	"	3	1 ditto.
		1—2′ 6″ ditto. ..	"	"	3	1 ditto.
Total 5 miles		50′ 3″			67 or 13·4 r.ft. per mile.	

(excluding mileage having no bridge and culvert).

Allowance of 20 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 6 (20′ − 13·4′) = 39·6 r.ft.

∴ R. C. pipe culverts = ¼ × 39·6 = 9·9, say	..	9
Minor bridges up to 30 ft. = ¾ × 39·6 = 29·7, say	..	30
Total	..	106 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	30
Constructing reinforced concrete pipe culverts	..	76
Total	..	106 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	Nil	..	..	..	
2	3	2—3′ 0″ arched masonry culvert ..	No	240	..	
		1—1′ 6″ pipe culvert ..	"	No	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto. ..	"	"	3	1 ditto.
3	3	1—3′ 9″ arched masonry culvert ..	"	160	..	
		1—1′ 6″ pipe culvert ..	"	No	3	1 ditto.
		1—6′ 0″ arched masonry culvert ..	"	240	..	
4	3	1—4′ 0″ ditto. ..	"	160	..	
5	3	1—1′ 6″ pipe culvert ..	"	No	3	1 ditto.
		1—1′ 6″ ditto. ..	"	"	3	1 ditto.
		1—7′ 9″ plank-topped culvert ..	"	320	..	
		1—2′ 0″ pipe culvert ..	"	No	3	1 ditto.
		1—1′ 0″ ditto. ..	"	"	3	1 ditto.
Carried over ..		38′ 0″		1,120	21	

Hooghly—Estimate No. 11.—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward ..		38′ 0″		1,120	21	
6	4	2—1′ 6″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto. ..	„	„	3	1 ditto.
		1—1′ 0″ ditto. ..	„	„	3	1 ditto.
		1—2′ 9″ arched masonry culvert ..	„	„	3	1 ditto.
		1—1′ 6″ ditto. ..	„	„	3	1 ditto.
		1—2′ 6″ ditto. ..	„	„	3	1 ditto.
Total 5 miles (excluding mileage having no bridge and culvert).		50′ 3″		1,120	39	
				or	28	
					67 or 13·4 r.ft. per mile.	

Allowance of 20 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and bridges of length up to 30 ft. = 6(20′ − 13·4′) = 39·6 r.ft.

∴ R. C. pipe culverts = ¼ × 39·6 = 9·9, say ..	9
Minor bridges up to 30 ft. = ¾ × 39·6 = 29·7, say ..	30
Total ..	106 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	30
Constructing reinforced concrete pipe culverts ..	48
Reconditioning existing bridges and culverts ..	28
Total ..	106 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 24′ =	126,720		*Deduct* existing— 5,280′ × 24′ =	126,720	
		464,640			464,640	
	= 32·17 bighas at Rs. 100 per bigha ..	..	3,217	= 32·17 bighas at Rs. 100 per bigha ..	..	3,217
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— 5,280′ × (11′ + 19′)/2 × 2·3′ =	182,160		*Deduct* existing— 5,280′ × (11′ + 19′)/2 × 2·3′ =	182,160	
		667,920			609,840	
	At Rs. 5 per 1,000 c.ft.	..	3,340	At Rs. 5 per 1,000 c.ft.	..	3,049
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 6 per 100 r.ft.	..	634	At Rs. 6 per 100 r.ft.	..	634
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 25 per 100 c.ft.	..	4,400	At Rs. 25 per 100 c.ft.	..	7,040
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400		....		..
	At Rs. 50 per 100 c.ft.	..	7,700	....		..
		S. ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			31,546			17,047
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,155			1,705
	Total		34,701			18,752
	Say		35,000			19,000

Hooghly—Estimate No. 11.—*concld.*

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A.			Specification B.		
	Quantity.	Rate.	Cost.	Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	6·0 miles.	35,000 per mile.	2,10,000	6·0 miles.	19,000 per mile.	1,14,000
Constructing minor bridges of length up to 30 ft.	30 r.ft.	330 per r.ft.	9,900	30 r.ft.	330 per r.ft.	9,900
Constructing reinforced concrete pipe culverts	76 r.ft.	300 per r.ft.	22,800	48 r.ft.	300 per r.ft.	14,400
Reconditioning existing bridges and culverts	..	..	..	28 r.ft.	40 per r.ft.	1,120
Total ..			2,42,700			1,39,420
Say ..			**2·50 lakhs.**			**1·5 lakhs.**

ESTIMATE No. 12.

Road No. C Sub-section 1—Kirtichandrapur to Suruichowmatha.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.		Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Embankment. Height above or below H. F. L. Above.	Embankment. Height above or below H. F. L. Below.	Embankment. Length for which road is below H. F. L.	Embankment. Proposed height.	Embankment. Existing width of crest.	Embankment. Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
		Ft.	Rs.	Ft.		Ft.		Ft.	Ft.	Ft.	Rs. a.	Rs. a.
New alignment.	1	..	100	..	..	3	..	5	..	..	19 2	53 8
	2	..	100	..	..	2	..	4	..	..	19 14	54 4
	3	..	100	..	..	2	..	4	..	..	20 10	55 0
	4	..	100	..	..	2	..	4	..	..	21 6	55 12
Total	4	..	400	..	..	..	..	17	..	..	81 0	218 8
Average		..	100	..	..	..	..	4·2	..	..	20 3	54 10
Say		..	..	..	..	..	..	5	..	..	21	55 0
Unmetalled.	5	60	100	0·50	..	1·50	..	4	26,40, 24	42,45, 40	22 2	56 8
	6	60	100	0·50	..	2·00	..	4	26,40, 24	42, 45, 40	22 14	57 4
	6·1	60	100	0·50	..	2·00	..	4	26, 40, 24	42, 45, 40	23 10	58 0
Total	2·1	180	300	1·50	..	..	..	12	78, 72	126, 120	68 10	171 12
Average	..	60	100	0·50	..	..	..	4	26, 24	42, 40	22 14	57 4
Say		..	..	..	..	..	..	..	..	..	23 0	58 0

Prevailing average rate for—

			Rs. a.			Rs. a.
Earthwork	..	Per 1,000 c. ft.	4 0	Single brick soling 3″	Per 100 s. ft.	6 0
Turfing	..	Per 1 000 s. ft.	3 8	Double brick soling 6″	Per 100 s. ft.	11 0
Brick-on-end edging	..	Per 100 r. ft.	5 8			

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	5	1—650′ 0″ unbridged gap—River Darakeswar.	..	..	1,000	Bridge (excluded from total).
2	4	Nil.	..	..	..	..
3	4	1—100′ 0″ unbridged gap—Baha Khal.	..	..	100	Bridge.
4	4	1—20′ 0″ unbridged gap—Kandur Khal.	..	..	20	ditto.
5	4	1—1′ 6″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 6″ ditto. ..	"	"	3	1 ditto.
6	4	Nil. ..	..	..	..	
6·1	4	Nil. ..	..	..	..	
Total 6·1		124 or 31 r. ft. per mile	..	..	126	or 31·5 r. ft. per mile.
		Bridges of over 100 ft. in length	..	..	1,000	
					1,126	

Allowance of 35 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $=(6\cdot1'\times35-126')=$ say 88 ft.

∴ R. C. pipe culverts $=\frac{1}{4}\times88=22$ r. ft., say	..	..	24
Minor bridges up to 30 ft. $=\frac{3}{4}\times88=66$ r. ft.	..	..	65
Total		..	1,215 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft.	..	..	1,000
Constructing minor bridges of length above 30 ft.	..	..	100
Constructing minor bridges of length up to 30 ft.	..	..	85
Constructing reinforced concrete pipe culverts	..	..	30
Total		..	1,215 r.ft.

Hooghly—Estimate No. 12—*contd.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) *Entirely new road.*

Items.	Specification A. Details.		Specification A. Cost. Rs.	Specification B. Details.		Specification B. Cost. Rs.
Land ..	5,280′ × 124′ = = 45·46 bighas. At Rs. 100 per bigha	S. ft. 654,720 ..	 4,546	5,280′ × 124′ = 45·46 bighas. At Rs. 100 per bigha	S. ft. 654,720 ..	 4,546
Earthwork ..	5,280′ × 209′ = At Rs. 4 per 1,000 c. ft.	C. ft. 1,103,520 ..	 4,414	5,280′ × 196′ = At Rs. 4 per 1,000 c. ft.	C. ft. 1,034,880 ..	 4,140
Turfing ..	5,280′ × 22·5′ = At Rs. 3-8 per 1,000 s. ft.	S. ft. 118,800 ..	 416	5,280′ × 22·5′ = At Rs. 3-8 per 1,000 s. ft.	S. ft. 118,800 ..	 416
Edging ..	5,280′ × 2 = At Rs. 5-8 per 1,000 r. ft.	R. ft. 10,560 ..	 581	5,280′ × 2 = At Rs. 5-8 per 100 r. ft.	R. ft. 10,560 ..	 581
Soling ..	5,280′ × 10′ = At Rs. 11 per 100 s. ft.	S.ft. 52,800 ..	 5,808	5,280′ × 8′ = At Rs. 6 per 100 s. ft.	S.ft. 42,240 ..	 2,534
Jhama metal ..	5,280′ × 10′ × 4″ = At Rs. 21 per 100 c. ft.	C.ft. 17,600 ..	 3,344	5,280′ × 8′ × 8″ = At Rs. 21 per 100 c. ft.	C. ft. 28,160 ..	 5,350
Stone metal ..	5,280′ × 10′ × 3½″ = At Rs. 55 per 100 c. ft.	C.ft. 15,400 ..	 8,170	....		..
Wearing course ..	5,280′ × 10′ = At Rs. 11-2 per 100 s. ft.	S. ft. 52,800 ..	 5,874	...		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			33,693			17,624
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,369			1,762
		Total ..	37,062			19,386
		Say ..	37,500			19,500

(b) *Existing unmetalled road.*

Items.	Specification A. Details.		Specification A. Cost. Rs.	Specification B. Details.		Specification B. Cost. Rs.
Land ..	5,280′ × 112′ = *Deduct* existing— 5,280′ × 30′ = = 19·06 bighas at Rs. 100 per bigha.	S. ft. 591,360 316,800 274,560	 1,906	5,280′ × 112′ = *Deduct* existing— 5,280′ × 30′ = = 19·06 bighas at Rs. 100 per bigha.	S. ft. 591,360 316,800 274,560	 1,906
Earthwork ..	5,280′ × 161′ = *Deduct* existing— $5,280' \times \frac{26'+42'}{2} \times 0\cdot5$ At Rs. 4 per 1,000 c. ft.	C. ft. 850,080 = 89,760 760,320 ..	 3,041	5,280′ × 150′ = *Deduct* existing— $5,280' \times \frac{24'+40'}{2} \times \cdot5$ At Rs. 4 per 1,000 c. ft.	C. ft. 792,000 = 84,480 707,520 ..	 2,830
Turfing ..	5,280′ × 18′ = At Rs. 3-8 per 1,000 s. ft.	S. ft. 95,040 ..	 333	5,280′ × 18′ = At Rs. 3-8 per 1,000 s. ft.	S. ft. 95,040 ..	 333
Edging ..	5,280′ × 2 = At Rs. 5-8 per 100 r. ft.	R.ft. 10,560 ..	 581	5,280′ × 2′ = At Rs. 5-8 per 100 r. ft.	R. ft. 10,560 ..	 581
Soling ..	5,280′ × 10′ = At Rs. 11 per 100 s. ft.	S. ft. 52,800 ..	 5,808	5,280′ × 8′ = At Rs. 6 per 100 s. ft.	S. ft. 42,240 ..	 2,534
Jhama metal ..	5,280′ × 10′ × 4″ = At Rs. 23 per 100 c. ft.	C. ft. 17,600 ..	 4,048	5,280′ × 8′ × 8″ = At Rs. 23 per 100 c. ft.	C. ft. 28,160 ..	 6,477
Carried over			15,717			14,661

...ugny—Estimate No. 12—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward	..	15,717		14,661
Stone metal ..	C. ft. 5,280′ × 10′ × 3½″ = 15,400 At Rs. 58 per 100 c. ft. ..	8,932	....	..
Wearing course ..	S. ft. 5,280′ × 10′ = 52,800 At Rs. 11·2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		30,763		14,901
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,076		1,490
	Total ..	33,839		16,391
	Say ..	34,000		16,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	4·0 miles.	37,500 per mile.	1,50,000	4·0 miles.	19,500 per mile.	78,000
Improving existing unmetalled road ..	2·1 miles.	34,000 per mile.	71,400	2·1 miles.	16,500 per mile.	34,650
Constructing major bridges of length above 300 ft.—(*i*) Darakeswar river	1,000 r. ft.	515 per r. ft.	5,15,000	1,000 r. ft.	515 per r. ft.	5,15,000
Constructing approaches to above ..	2 sets.	5,750 each.	11,500	2 sets.	5,750 each.	11,500
Constructing minor bridges of length above 30 ft.	100 r. ft.	260 per r. ft.	26,000	100 r. ft.	260 per r. ft.	26,000
Constructing minor bridges of length up to 30 ft.	85 r. ft.	330 per r. ft.	28,050	85 r. ft.	330 per r. ft.	28,050
Constructing reinforced concrete pipe culverts	30 r. ft.	300 per r. ft.	9,000	30 r. ft.	300 per r. ft.	9,000
Total ..	..	..	8,10,950	..	..	7,02,200
Say ..	..	..	8·25 lakhs.	..	..	7·25 lakhs.

Estimate No. 13.

Road No. C—Sub-section 2—Surulchowmatha to Khatul.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal. Pakur.	Rate for stone metal. Jamtara.	Rate for stone metal. Gidni.
	Ft.	Rs.	Ft.				Ft.	Ft.		Rs. a.	Rs.	Rs.	Rs.
1	65	100	0·5	..	..	..	5	35	..	18 8	55·86	51·69	50·82
2	65	100	0·5	..	..	..	5	35	..	18 8	56·66	52·49	50·02
3	65	100	0·5	..	..	..	5	35	..	18 8	57·46	53·29	49·22
4	65	100	0·5	..	..	..	5	35	..	18 8	54·09	54·09	48·42
Total 4	260	400	2·0	..	..	..	20	140	..	74 0	228·24	211·56	198·48
Average	65	100	0·5	..	..	..	5	35	..	18 8	57·06	52·89	49·62
Say	..	..	..	..	..	..	..	..	..	20 0		54	

Prevailing average rate for—

Item		Rs. a.	Item		Rs. a.
Earthwork	.. 1,000 c.ft.	4 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 s.ft.	11 0
Brick-on-end edging	.. 100 r.ft.	5 8			

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to reconditioning and probable cost.	Replacement proposals in r.ft. R. ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	5	Nil	..	..	..	
2	5	1—2′ 0″ arched masonry culvert	No	No	3	1—3′ dia. R. C. pipe culvert.
3	5	Nil	..	..	..	
4	5	1—4′ 0″ plank-topped culvert	No.	No.	3	1 ditto.
Total 4	..	6 or 1·5 r.ft. per mile	..	..	6 or 1·5 r.ft. per mile.	

Allowance of 15 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 4 (15′—1·5′) = 54 r.ft.

∴R. C. pipe culverts = ¼ × 54 = 13·5, say	.. ..	12
Minor bridges up to 30 ft. = ¾ × 54 = 40·5, say	.. ..	40
	Total	58 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	40
Constructing reinforced concrete pipe culverts	..	18
	Total	58 r.ft.

Hooghly—Estimate No. 13—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 124′ =	654,720		5,280′ × 124′ =	654,720	
	Deduct existing 5,280′ × 65′	343,200		*Deduct* existing 5,280′ × 65′ =	343,200	
		311,520			311,520	
	= 21·63 bighas at Rs. 100 per bigha		2,163	= 21·63 bighas at Rs. 100 per bigha ..		2,163
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 209′ =	11,03,520		5,280′ × 196′ =	1,034,800	
	At Rs. 4 per 1,000 c.ft. ..		4,414	at Rs. 4 per 1,000 c.ft. ..		4,139
		S.ft.			S.ft.	
Turfing ..	5,280′ × 22·5′ =	118,800		5,280′ × 22·5′ =	118,800	
	At Rs. 3-8 per 1,000 s.ft. ..		416	At Rs 3-8 per 1,000 s.ft. ..		416
		R.ft.			R.ft.	
Edging ..	5,280′ × 2	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft. ..		5,808	At Rs. 6 per 100 s.ft. ..		2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 20 per 100 c.ft. ..		3,520	At Rs. 20 per 100 c.ft. ..		5,632
		C. ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 54 per 100 c.ft. ..		8,316	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			31,332			15,705
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,133			1,570
	Total ..		34,465			17,275
	Say ..		34,500			17,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road.	4·0 miles.	34,500 per mile.	1,38,000	4·0 miles.	17,500 per mile.	70,000
Constructing minor bridges of length up to 30 ft.	40 r.ft.	330 per r.ft.	13,200	40 r.ft.	330 per r.ft.	13,200
Constructing reinforced concrete pipe culverts.	18 r.ft.	300 per r.ft.	5,400	18 r.ft.	300 per r.ft.	5,400
Total ..	..	..	**1,56,600**	..	..	**88,600**
Say ..	..	..	**1·75 lakhs.**	..	..	**1·00 lakh.**

ESTIMATE No. 14.

Road No. D—Sub-section 1—Harihar to Surulchowmatha.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for Jhama metal.	Rate for stone metal.		
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		Pakur.	Jamtara.	Gidni.
				Above.	Below.								
	Ft.	Rs.	Ft.				Ft.	Ft.		Rs. a.	Rs.	Rs.	Rs.
1	40	100	0·0	..	..	..	3	20	..	18 8	63 06	58·86	51·46
2	40	100	0·5	..	..	..	3	20	..	18 8	62·26	58 06	52·26
3	30	100	0·5	..	..	..	3	20	..	18 8	61·46	57·26	53 06
4	30	100	0 0	..	..	..	3	20	..	18 8	60 66	56·46	53·86
5	40	100	1·0	..	..	..	3	20	..	18 8	59 86	55 66	54 66
6	40	100	0·5	..	..	..	3	20	..	18 8	59 06	54 86	55·46
7	28	100	0·5	..	..	..	3	20	..	18 8	58·26	54 06	56 26
8	30	100	0·5	..	..	..	3	20	..	18 8	57 16	53 26	57 06
9	30	100	0·5	..	..	..	3	20	..	18 8	56·66	52 46	57 86
10·13	30	100	1·0	..	..	..	3	20	..	18 8	55 86	51 66	58 66
Total 10·13	338	1,000	5·0	..	..	..	30	200	.	185 0	594·4	552 6	550·6
Average ..	33 8	100	0·5	..	..	..	3	20	..	18 8	59 41	55·26	55 06
Say ..	34	..	..	..	..	..	..	..	..	20 0		60	

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	.. 1,000 c.ft.	4 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing	.. 1,000 s.ft.	3 8	Double brick soling 6″	.. 100 s.ft.	11 0
Brick-on-end edging	100 r.ft.	5 8			

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	Nil.				
2	3	1—1′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
	..	1—1′ 0″ ditto ..	„	„	3	1 ditto.
3	3	1—2′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
		1—1′ 0″ pipe culvert ..	„	„	3	1 ditto.
Carried over		7′ 0″			15	

Hooghly—Estimate No. 14—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		7′ 0″			15	
4	3	1—2′ 0″ arched masonry culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	"	"	3	1 ditto.
5	3	1—unbridged gap, Amodar river	"	"	140	Bridge (excluded from total).
		1—2′ 0″ pipe culvert ..	"	"	3	1—3′ dia. R. C. pipe culvert.
		1—3′ 0″ arched masonry culvert ..	"	"	3	1 ditto.
6	3	1—2′ 0″ ditto ..	"	"	3	1 ditto.
7	3	1—2′ 0″ ditto. ..	"	"	3	1 ditto.
		1—1′ 0″ pipe culvert ..	"	"	3	1 ditto.
8	3	1—2′ 0″ arched masonry culvert ..	"	"	3	1 ditto.
		1—1′ 0″ pipe culvert ..	"	"	3	1 ditto.
		1—1′ 9″ ditto ..	"	"	3	1 ditto.
9	3	1—2′ 0″ arched masonry culvert ..	"	"	3	1 ditto.
		1—3′ 0″ ditto ..	"	"	3	1 ditto.
10	3	1—2′ 0″ ditto ..	"	"	3	1 ditto.
		1—4′ 0″ ditto ..	"	"	3	1 ditto.
(11) 10·13	3	Nil.				
Total 10·13 ..		38′ 9″ or 3·82 r.ft. per mile	..	..	57	or 5·62 r.ft per mile.
		Bridges of over 100 ft. ..	..	..	140	

Allowance of 12·14 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 10·13′ (12·14′ − 5·62′) = 66 r.ft.

∴ R. C. pipe culverts = ¼ × 66 = 16·5, say ..	.. ..	16
Minor bridges up to 30 ft. = ¾ × 66 = 49·5, say	.. ..	50
	Total ..	263 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft. ..	..	140
Constructing minor bridges of length up to 30 ft. ..	..	50
Constructing reinforced concrete pipe culverts ..	..	73
	Total ..	263 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 100′ =	528,000		5,280′ × 100′ =	528,000	
	Deduct existing— 5,280′ × 34′ =	179,520		*Deduct* existing— 5,280′ × 34′ =	179,520	
		348,480			348,480	
	= 24·2 bighas. At Rs. 100 per bigha	..	2,420	= 24·2 bighas. At Rs. 100 per bigha	..	2,420
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117′ =	617,760		5,280′ × 108′ ..	570,240	
	At Rs. 4 per 1,000 c.ft.		2,471	At Rs. 4 per 1,000 c.ft.		2,281
Carried over			4,891			4,701

Hooghly—Estimate No. 14—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought forward			4,891			4,701
		S.ft.			S.ft.	
Turfing ..	5,280′×13·5′ = At Rs. 3-8 per 1000 s.ft.	71,280	250	5,280′×13·5′ = At Rs. 3-8 per 1,000 s.ft.	71,280	250
		R.ft.			R.ft.	
Edging ..	5,280′×2 .. At Rs. 5-8 per 100 r.ft.	10,560	581	5,280′×2 – At Rs. 5-8 per 100 r.ft.	10,560	581
		S.ft.			S.ft.	
Soling ..	5,280′×10′ = At Rs. 11 per 100 s.ft.	52,800 ..	5,808	5,280′×8′ – At Rs. 6 per 100 s.ft.	42,240 ..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′×10′×4″ – At Rs. 20 per 100 c.ft.	17,600 ..	3,520	5,280′×8′×8″ = At Rs. 20 per 100 c.ft.	28,160 ..	5,632
		C.ft.				
Stone metal ..	5,280′×10′×3½″ = At Rs. 60 per 100 c.ft.	15,400 ..	9,240	....		..
		S.ft.				
Wearing course	5,280′×10′ = At Rs. 11-2 per 100 s.ft.	52,800	5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			30,404			13,938
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,040			1,393
		Total ..	33,444			15,331
		Say ..	33,500			15,500

Part (4)—*Rough estimate showing probable cost of the road including bridging.*

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	10·13 miles.	33,500 per mile.	3,39,355	10·13 miles.	15,500 per mile.	1,57,015
Constructing major bridges of length from 110 ft. to 300 ft. (Amodar river)	140 r.ft.	320 per r.ft.	44,800	140 r.ft.	320 per r.ft.	44,800
Constructing approaches to above ..	2 sets.	2,500 each.	5,000	2 sets.	2,500 each.	5,000
Constructing minor bridges of length up to 30 ft.	50 r.ft.	330 per r.ft.	16,500	50 r.ft.	330 per r.ft.	16,500
Constructing reinforced concrete pipe culverts	73 r.ft.	300 per r.ft.	21,900	73 r.ft.	300 per r.ft.	21,900
Total ..	..	..	4,27,555	..	..	2,45,215
Say ..	..	..	4·25 lakhs.	..	..	2·50 lakhs.

ESTIMATE No. 15.

Road No. E—Sub-section 1—Sepahigachi to Pursura (Champadanga).

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H. F. L.: Above.	Height above or below H. F. L.: Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.				Ft.	Ft.	Ft.	Rs.	Rs.
(23) 1	35	75	2·75	..	..	..	3	22	35	18	35
2	110	75	3·75	..	..	..	4	24	40, 48, 42	18	35
3	107	75	3·25	..	..	..	4	22	40, 42, 42	18	35
4	38	75	1·00	..	..	..	3	20	26	18	35
5	30	100	1·75	..	..	..	3	24, 25, 25	30	18	35
6	36	100	3·00	..	..	..	4	24, 26, 26	36	18	35
7	37	100	2·75	..	..	..	3	24, 25, 25	35	18	35
8	45	100	3·50	..	..	..	4	23	40, 44, 42	18	35
9	59	100	3·75	..	..	..	4	24, 33, 26	40, 54, 42	18	35
10	43	100	2·00	..	..	..	3	24, 35, 26	40	18	35
(33) 11	75	50	2·00	..	..	..	3	24	32	18	35
Total 11	615	950	29·50	..	..	..	38	255, 263	394, 402	198	385
Average	56	86	2·68	..	..	..	3·5	23, 24	36, 37	18	35
Say ..	..	100	..	..	..	..	4	..	..	..	..

Prevailing average rate for—

Item		Unit	Rs.	a.	Item		Unit	Rs.	a.
Earthwork	..	1,000 c.ft.	5	0	Single brick soling 3″	..	100 s.ft.	6	0
Turfing ..	..	1,000 s.ft.	3	8	Double brick soling 6″	..	100 s.ft.	11	0
Brick-on-end edging	..	100 r.ft.	5	8					

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type.
1	2	3	4	5	6	7
	Ft.					
(23) 1	3	1—2′ 0″ arched masonry culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	”	”	6	2 ditto.
		1—8′ 0″ ditto ..	”	”	9	3 ditto.
2	4	1—10′ 3″ ditto ..	”	”	12	3—4′ ditto.
		1—10′ 6″ ditto ..	”	”	12	3 ditto.
		1—6′ 3″ ditto ..	”	”	8	2 ditto.
		1—4′ 0″ ditto ..	”	”	4	1 ditto.
3	4	1—5′ 0″ ditto ..	”	”	6	2—3′ ditto.
		1—6′ 0″ ditto ..	”	”	6	2 ditto.
		2—6′ 3″ ditto ..	”	”	15	Bridge.
		3—10′ 10″ plank-topped bridge ..	”	”	40	ditto.
		2—6′ 3″ arched masonry culvert ..	”	”	15	ditto.
		1—1′ 0″ pipe culvert	”	”	3	1—3′ dia. R. C. pipe culvert.
4	3	3—10′ 0″, 2—9′ 0″ = 48′ 0″ plank-topped bridge ..	”	”	50	Bridge.
5	3	1—3′ 2″ arched masonry culvert ..	”	” ..	3	1—3′ dia. R. C. pipe culvert.
Carried over		165′ 8″			192	

Hooghly—Estimate No. 15—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..		165′ 8″			192	
6	4	1—4′ 0″ arched masonry culvert ..	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	„	„	4	1 ditto.
		1—3′ 6″ ditto ..	„	„	4	1 ditto.
		2—6′ 3″ ditto ..	„	„	15	Bridge.
7	3	1—5′ 3″ ditto ..	„	„	6	2—3′ dia. R. C. pipe culvert.
		1—6′ 6″ ditto ..	„	„	6	2 ditto.
		1—3′ 0″ ditto ..	„	„	3	1 ditto.
(30) 8	4	1—5′ 2″ ditto ..	„	„	6	2 ditto.
		1—6′ 0″ ditto ..	„	„	6	2 ditto.
		1—8′ 0″ ditto ..	„	„	9	3 ditto.
(31) 9	4	2—20′ 6″ plank-topped bridge ..	„	„	50	Bridge.
		2—10′ 0″, 1—19′ 9″ (39′ 9″) arched masonry culvert ..	„	„	40	ditto.
10	3	2—6′ 0″, 1—12′ 0″ (24′ 0″) ditto ..	„	„	30	ditto.
		1—4′ 0″ ditto ..	„	„	6	2—3′ dia. R. C. pipe culvert.
		1—10′ 0″ ditto ..	„	„	9	3 ditto.
(33) 11	3	1—4′ 0″ ditto ..	„	„	6	2 ditto.
		1—5′ 0″ ditto ..	„	„	6	2 ditto.
Total 11		351·36 or 31·94 r.ft. per mile.			402 or 36·55 r.ft. per mile.	

Allowance of 38·73 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 11 (38·73 − 36·55) = 24 r.ft.

∴ R. C. pipe culverts $\frac{1}{4} \times 24 = 6$ 6

Minor bridges up to 30 ft.—$\frac{3}{4} \times 24 = 18$, say .. 20

Total .. 428 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	180
Constructing minor bridges of length up to 30 ft.	..	95
Constructing reinforced concrete pipe culverts	..	153
Total	..	428 r. ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
(23) 1	3	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	„	„	6	2 ditto.
		1—8′ 0″ ditto ..	„	„	9	3 ditto.
2	4	1—10′ 3″ ditto ..	„	„	12	3—4′ ditto.
		1—10′ 6″ ditto ..	„	„	12	3—4′ ditto.
		1—6′ 3″ ditto ..	„	„	8	2 ditto.
		1—4′ 0″ ditto ..	„	„	4	1 ditto.
Carried over ..		45′ 0″			54	

Hooghly—Estimate No. 15—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward ..		45′ 0″			54	
3	4	1—5′ 0″ arched masonry culvert ..	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—6′ 0″ ditto ..	,,	,,	6	2 ditto.
		2—6′ 3″ ditto ..	,,	,,	15	Bridge.
		3—10′ 10″ plank-topped bridge ..	,,	,,	40	ditto.
		2—6′ 3″ arched masonry culvert ..	,,	,,	15	ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
4	3	3—10′ 0″ } 2—9′ 0″ } plank-topped bridge. ——— 48′ 0″	,,	,,	50	Bridge.
5	3	1—3′ 2″ arched masonry culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
6	4	1—4′ 0″ ditto ..	,,	160	..	
		1—4′ 0″ ditto ..	,,	No	4	1—4′ dia. R. C. pipe culvert.
		1—3′ 6″ ditto ..	,,	,,	4	1 ditto.
		2—6′ 3″ ditto ..	,,	,,	15	Bridge.
7	3	1—5′ 3″ ditto ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—6′ 6″ ditto ..	,,	,,	6	2 ditto.
		1—3′ 0″ ditto ..	,,	,,	3	1 ditto.
(30) 8	4	1—5′ 2″ ditto ..	,,	,,	6	2 ditto.
		1—6′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—8′ 0″ ditto ..	,,	,,	9	3 ditto.
(31) 9	4	2—20′ 6″ plank-topped bridge.	,,	,,	50	Bridge.
		2—10′ 0″ } 1—19′ 9″ } arched masonry culvert .. ——— 39′ 9″	..	1,600	..	
10	3	2—6′ 0″ } 1—12′ 0″ } ditto .. ——— 24′ 0″	No	No	30	Bridge.
		1—4′ 0″ ditto ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—10′ 0″ ditto ..	,,	,,	9	3 ditto.
(33) 11	3	1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—5′ 0″ ditto ..	,,	,,	6	2 ditto.
Total 11		351·36 or 31·91 r.ft. per mile.		1,760 or	358 44 402	or 36·55 r.ft. per mile.

Allowance of 38·73 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.	
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 11 (38·73′ − 36·55′) = 24 r.ft.	
∴ R. C. pipe culverts = $\frac{1}{4} \times 24 = 6$	6
Minor bridges up to 30 ft. = $\frac{3}{4} \times 24 = 18$, say	20
Total ..	428 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft. ..	140
Constructing minor bridges of length up to 30 ft. ..	95
Constructing reinforced concrete pipe culverts ..	149
Reconditioning existing bridges and culverts ..	44
Total ..	428 r.ft.

Hooghly—Estimate No. 15—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 56′ =	295,680		*Deduct* existing— 5,280′ × 56′ =	295,680	
		295,680			295,680	
	= 20·53 bighas. At Rs. 100 per bigha	..	2,053	= 20·53 bighas. At Rs. 100 per bigha	..	2,053
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— $5,280' \times \frac{24' + 37'}{2} \times 2\cdot68'$ =	431,587		*Deduct* existing— $5,280' \times \frac{23' + 36'}{2} \times 2\cdot68'$ =	431,587	
		418,493			360,413	
	At Rs. 5 per 1,000 c.ft.	..	2,092	At Rs. 5 per 1,000 c.ft.	..	1,802
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 18 per 100 c.ft.		3,168	At Rs. 18 per 100 c.ft.	..	5,069
		C. ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 35 per 100 c.ft.	..	5,390	....	..	
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....	..	
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			25,539			12,612
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,554			1,261
	Total	..	28,093			13,873
	Say	..	28,000			14,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	11·00 miles.	28,000 per mile.	3,08,000	11·00 miles.	14,000 per mile.	1,54,000
Constructing minor bridges of length above 30 ft.	180 r.ft.	260 per r.ft.	46,800	140 r.ft.	260 per r.ft.	36,400
Constructing minor bridges of length up to 30 ft.	95 r.ft.	330 per r.ft.	31,350	95 r.ft.	330 per r.ft.	31,350
Constructing reinforced concrete pipe culverts.	153 r.ft.	300 per r.ft.	45,900	149 r.ft.	300 per r.ft.	44,700
Reconditioning existing bridges and culverts.	..	..	..	44 r.ft.	40 per r.ft.	1,760
Total ..			4,32,050			2,68,210
Say ..			4·50 lakhs.			2·75 lakhs.

ESTIMATE No. 16.

Road No. E—Sub-sections 2 and 3—Pursura (Champadanga) to Arambagh.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
				Above.	Below.						
(Pursura to Rasulpur.)											
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	100	200	3·00	..	8	1	15	20	36	21	36
2	110	200	4·00	..	8	1	16	18	42	21	37
3	55	200	2·00	..	4	1	8	18	28	21	38
4	60	200	2·00	..	4	1	8	14	24	21	39
5	65	200	1·75	..	4	1	8	12	24	21	40
6	60	200	2·00	..	3	1	7	16	28	21	41
7	60	200	2·50	..	4	1	9	18	36	21	42
Total 7	510	1,100	17·25	..	..	..	71	116	218	147	273
Average	72·86	200	2·46	..	..	..	10·14	16·57	31·1	21	39
Say	73	..	2·5	..	..	..	11	17	31	23	40
(Rasulpur to Arambagh.)											
(1) 8	55	200	1·50	..	5	1	9	30	38	21	43
9	60	200	1·50	..	6	1	11	24	38	21	44
10	60	200	1·50	..	5	1	9	28	46	21	45
11	80	250	1·50	..	3	1	7	28	48	21	46
12	55	250	2·00	..	2	1	6	24	40	21	47
(6) 13	40	400	1·25	..	2	1	5	24	38	21	48
Total 6	350	1,500	9·25	..	..	..	47	158	248	126	273
Average	58·3	250	1·54	..	..	..	7·83	26·3	41·3	21	45·5
Say	58	..	1·5	..	..	..	8	26	41	23	47

Prevailing average rate for—

Item		Rs.	a.
Earthwork	.. 1,000 c.ft.	4	0
Turfing	.. 1,000 s.ft.	3	8
Brick-on-end edging	.. 100 r.ft.	5	8

Item	s.ft.	Rs.	a.
Single brick soling 3″ ..	100	6	0
Double brick soling 6″ ..	100	11	0

Analysis of rate of stone metal for 100 c. ft.

	Rs.	a.
Cost of stone metal including railway freight from Pakur to Tarakeswar station	23	2
Carting up to 1st mile (6 miles from Tarakeswar station)	7	12
Spreading and consolidation	5	0
	35	14
Say	36	0

Re. 1 is added per extra mileage of carting.

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
						R.ft.	Type.
1	2	3		4	5	6	7
	Ft.						
1	15	1—1,000′ 0″	Damodar river unbridged ..	..	..	1,000	Bridge (excluded from total).
		1—15′ 0″	gap ..	..	..	30	ditto.
		10—7′ 0″	sal wood trestle	No	No	90	ditto.
		1—3′ 0″	arched masonry culvert	„	„	15	ditto.
Carried over ..		88′ 0″				135	
		Bridges of over 100 ft.			..	1,000	

Hooghly—Estimate No. 16—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3		4	5	6	7
	Ft.						
Brought forward ..		88′ 0″				135	
		Bridges of over 100 ft.		..	..	1,000	
2	16	1—70′ 0″	gap ..	..	..	90	Bridge.
		1—1′ 3″	R. C. pipe culvert ..	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—30′ 0″	gap ..	..	..	30	Bridge.
		1—94′ 0″	sal wood trestle	No	No	100	ditto.
3	8	1—30′ 0″	gap	..	..	30	ditto.
		1—75′ 0″	do. ..	..	..	90	ditto.
4	8	1—70′ 0″	do. ..	..	..	90	ditto.
		1—10′ 0″	do. ..	..	..	9	3—3′ dia. R. C. pipe culvert.
		1—60′ 0″	do. ..	..	..	50	Bridge.
		1—150′ 0″	do. ..	..	..	50	ditto.
5	8	1—30′ 0″	do. ..	..	..	30	ditto.
		1—30′ 0″	do. ..	..	..	30	ditto.
		1—10′ 0″	do. ..	..	..	15	ditto.
6	7	1—70′ 0″	do. ..	..	..	80	ditto.
		1—30′ 0″	do. ..	..	..	30	ditto.
		1—5′ 0″	arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—30′ 0″	gap ..	..	..	30	Bridge.
		1—45′ 0″	do. ..	..	..	50	ditto.
7	9	1—140′ 0″	do. ..	..	..	120	ditto (excluded from total).
		4—30′ 0″	do. ..	..	..	120	ditto.
		1—3′ 0″	arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—10′ 0″	trough plated bridge.	„	„	15	Bridge.
		1—50′ 0″	gap ..	..	..	30	ditto.
(Rasulpur).	..	1—75′ 0″	do. ..	..	..	50	ditto.
8	9	1—1′ 6″	R. C. pipe culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—2′ 0″	arched masonry culvert.	„	..	4	1 ditto.
		1—70′ 0″	gap ..	..	..	90	Bridge.
		1—45′ 0″	do. ..	..	..	30	ditto.
9	11	1—60′ 0″	do. ..	..	..	30	ditto.
		1—50′ 0″	do. ..	..	..	50	ditto.
		1—40′ 0″	do. ..	..	..	50	ditto.
		1—5′ 0″	arched masonry culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
10	9	1—3′ 0″	ditto. ..	„	„	12	3 ditto.
		1—9′ 0″	plank-topped culvert.	„	„	20	Bridge.
11	7	1—1′ 6″	R. C. pipe culvert.	„	„	4	1—4′ dia. R. C. pipe culvert.
		1—8′ 6″	plank-topped culvert.	„	„	20	Bridge.
Carried over ..		1,361′ 75″				1,364	
		Bridges of over 100 ft.			..	1,240	

Hooghly—Estimate No. 16—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. — R. ft.	Replacement proposals in r. ft. — Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..		1,301′ 75″			1,364	
		Bridges of over 100 ft.			1,240	
12	6	2—15′ 0″ plank-topped culvert.	No	No	30	Bridge.
		3—4′ 0″ arched masonry culvert.	"	"	20	ditto.
		1—5′ 0″ trough plated culvert.	"	"	8	2—4′ dia. R. C. pipe culvert.
13	5	1—2′ 6″ culvert ..	"	"	9	3—3′ ditto.
Total 13	..	1,411·25 or 108·56 r.ft. per mile.	..		1,431 or 110·07 r.ft. per mile.	
		Bridges of over 100 ft. in length		..	1,240 (Excluded from total).	

Allowance of 200 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. $= 13 \times 200' - 1{,}431' = 2{,}600' - 1{,}431' = 1{,}169'$.

∴ R. C. pipe culverts $= \frac{1}{4} \times 1{,}169' = 292 \cdot 25$, say	..	292
Minor bridges up to 30 ft. $= \frac{3}{4} \times 1{,}169' = 876 \cdot 75$, say	..	880
Total	..	3,843 r. ft.

Abstract of the above.

(*Pursura to Rasulpur.*)

		R. ft.
Constructing major bridges of length above 300 ft.	..	1,000
Ditto ditto ditto from 110 ft. to 300 ft.	..	240
Constructing minor bridges of length above 30 ft.	..	740
Ditto ditto ditto up to 30 ft.	..	759
Constructing reinforced concrete pipe culverts	..	178
Total	..	2,917 r. ft.

(*Rasulpur to Arambagh.*)

		R. ft.
Constructing minor bridges of length above 30 ft.	..	190
Ditto ditto ditto up to 30 ft.	..	556
Constructing reinforced concrete pipe culverts	..	180
Total	..	**926 r. ft.**
Grand Total	..	**3,843 r. ft.**

Hooghly—Estimate No. 16—*contd.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing metalled road.

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 187′ =	987,360		5,280′ × 187′ =	987,360	
	Deduct existing—			*Deduct* existing		
	5,280′ × 73′ =	385,440		5,280′ × 73′ =	385,440	
		602,920			602,920	
	= 41·8 bighas			= 41·8 bighas		
	At Rs. 200 per bigha ..		8,360	At Rs. 200 per bigha ..		8,360
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 592′ =	3,125,760		5,280′ × 566′ =	2,988,480	
	Deduct existing—			*Deduct* existing—		
	$5,280' \times \frac{17'+31'}{2} \times 2\cdot5'$ =	316,800		$5,280' \times \frac{17'+31'}{2} \times 2\cdot5'$ =	316,800	
		2,808,960			2,671,680	
	At Rs. 4 per 1,000 c. ft. ..		11,236	At Rs. 4 per 1,000 c. ft. ..		10,687
Turfing ..	5,280′ × 49·5′ = 261,360 s. ft.			5,280′ × 49·5′ = 261,360 s. ft.		
	At Rs. 3-8 per 1,000 s. ft. ..		915	At Rs. 3-8 per 1,000 s. ft. ..		915
Edging ..	5,280′ × 2 = 10,560 r. ft.			5,280′ × 2 = 10,560 r. ft.		
	At Rs. 5-8 per 100 r. ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
Soling ..	5,280′ × 10′ = 52,800 s. ft.			5,280′ × 8′ = 42,240 s. ft.		
	At Rs. 11 per 100 s. ft. ..		5,808	At Rs. 6 per 100 s. ft.		2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft.			5,280′ × 8′ × 8″ = 28,160 c. ft.		
	At Rs. 23 per 100 c. ft. ..		4,048	At Rs. 23 per 100 c. ft. ..		6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft.			....		..
	At Rs. 40 per 100 c. ft. ..		6,160			
Wearing course	5,280′ × 10′ = 52,800 s. ft.			....		..
	At Rs. 11-2 per 100 s. ft.		5,874			
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each		240
			43,222			29,794
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		4,322			2,979
	Total ..		47,544			32,773
	Say ..		47,500			33,000

(b) Existing unmetalled road.

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 156′ =	823,680		5,280′ × 156′ =	823,680	
	Deduct existing—			*Deduct* existing—		
	5,280′ × 58′ =	306,240		5,280′ × 58′ =	306,240	
		517,440			517,440	
	= 35·9 bighas.			= 35·9 bighas.		
	At Rs. 250 per bigha ..		8,975	At Rs. 250 per bigha ..		8,975
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 381′ =	2,011,680		5,280′ × 361′ =	1,906,080	
	Deduct existing—			*Deduct* existing—		
	$5,280' \times \frac{67'}{2} \times 1\cdot5'$ =	265,320		$5,280' \times \frac{67'}{2} \times 1\cdot5'$ =	365,320	
		1,746,360			1,540,760	
	At Rs. 4 per 1,000 c. ft.		6,985	At Rs. 4 per 1,000 c. ft.		6,163
Carried over ..			15,960			15,138

Hooghly—Estimate No. 16—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward ..		15,960		15,138
Turfing ..	5,280'×36' = 190,080 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	665	5,280'×36' = 190,080 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	665
Edging ..	5,280'×2' = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280'×2' = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280'×10' = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280'×8' = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280'×10'×4" = 17,600 c. ft. At Rs. 23 per 100 c. ft. ..	4,048	5,280'×8'×8" = 28,160 c. ft. At Rs. 23 per 100 c. ft. ..	6,477
Stone metal ..	5,280'×10'×3½" = 15,400 c. ft. At Rs. 47 per 100 c. ft. ..	7,238	....	..
Wearing course	5,280'×10' = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		40,414		25,635
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	4,041		2,564
	Total ..	44,455		28,199
	Say ..	44,500		28,500

Part (4) Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road.	7 and 6 miles.	47,500 and 44,500 per mile.	3,32,500 and 2,67,000	7 and 6 miles.	33,000 and 28,500 per mile.	2,31,000 and 1,70,000
Constructing major bridges of length above 300 ft.—(1) Damodar river.	1,000 r. ft.	545 per r. ft.	5,45,000	1,000 r. ft.	545 per r. ft.	5,45,000
Constructing major birdges of length from 110 ft. to 300 ft.	240 r. ft.	360 per r. ft.	86,400	240 r. ft.	360 per r. ft.	86,400
Constructing approaches to above.	2 and 4 sets.	6,000 and 2,500 each.	12,000 and 10,000	2 and 4 sets.	6,000 and 2,500 each.	12,000 and 10,000
Constructing minor bridges of lengths above 30 ft.	740 and 190 r. ft.	260 and 260 per r. ft.	1,92,400 and 49,400	740 and 190 r. ft.	260 and 260 per r. ft.	1,92,400 and 49,400
Constructing minor bridges of length up to 30 ft.	759 and 556 r. ft.	330 and 330 per r. ft.	2,50,470 and 1,83,480	759 and 556 r. ft.	330 and 330 per r. ft.	2,50,470 and 1,83,480
Constructing reinforced concrete pipe culverts.	178 and 180 r. ft.	300 and 300 per r. ft.	53,400 and 54,000	178 and 180 r. ft.	300 and 300 per r. ft.	53,400 and 54,000
Total	..		**20,36,050**			**18,37,550**
Say	..		**20·75 lakhs.**			**18·75 lakhs.**

ESTIMATE No. 17.

Road No. E Sub-section 4 Arambagh to Kirtichandrapur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
(Unmetalled) 1	30	250	1·50	..	2·0	1·0	6	18	30	21	51
(Ditto) 2	35	200	1·75	..	3·0	1·0	7	18	30	21	50
(New alignment) 3 0·90	..	200	..	..	3·5	0·9	6	..	..	21	49
(Unmetalled) 4	39	163	1·75	..	1·6	1·0	5	15	29 5	21	48
(Ditto) 4·83	35	150	2·50	..	2·0	0·8	7	27	35	21	47
Total of unmetalled 3·93	139	763	7·5	..	..	..	25	78	124·5	105	196
Average ..	31·75	190 7	1·87	..	..	..	6·25	19 5	31·1	21	49
Say ..	35	200	1·9	..	..	..	7	19	31	23	50
Total of new alignment 0·90	..	200	..	..	..	..	6	..	..	say 23	say 50

Prevailing average rate for-

			Rs. a.			Rs. a.
Earthwork ..	..	1,000 c. ft.	4 0	Single brick soling 3″	100 s. ft.	6 0
Turfing ..	..	1,000 s. ft.	3 8	Double brick soling 6″	100 s. ft.	11 0
Brick-on-end edging	..	100 r. ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	6	1—2′ 0″ steel topped culvert.	No	No	4	1 4′ dia. R. C. pipe culvert.
		1—5′ 0″ plank topped culvert.	,,	,,	15	Bridge.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1 4′ dia. R. C. pipe culvert.
		1—1′ 0″ pipe culvert	,,	,,	4	1 ditto.
		1—3′ 6″ masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 3″ pipe culvert	,,	,,	4	1 ditto.
		1—2′ 0″ masonry culvert.	,,	,,	4	1 ditto.
		1—4′ 0″ trough plated culvert.	,,	,,	15	Bridge.
2	7	1—4′ 0″ masonry culvert.	,,	,,	8	2—4′ dia. R. C. pipe culvert.
		2—4′ 0″ do. ..	,,	,,	12	3 ditto.
		1—5′ 0″ do. ..	,,	,,	15	Bridge.
		1—5′ 0″ do. ..	,,	,,	15	ditto.
3	6	1—115′ 0″ arched culvert.	,,	,,	120	Ditto (excluded from total).
		1 new ..	..	..	20	Bridge.
		1 do. ..	..	..	15	ditto.
		1 do. ..	..	..	4	1—4′ dia. R. C. pipe culvert.
Carried over		42′ 9″			143	
		Bridge of over 100 ft.			120	

Hooghly—Estimate No. 17—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to reconditon and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		42′ 9″			143	
		Bridge of over 100 ft.			120	
4	5	1—3′ 0″ masonry culvert.	No	No	8	2—4′ dia. R. C. pipe culvert.
		1—5′ 0″ ditto ..	,,	,,	12	3 ditto.
		1 5′ 0″ ditto ..	,,	,,	12	3 ditto.
		1—3′ 0″ ditto ..	,,	,,	8	2 ditto.
		3—10′ 0″ ditto ..	,,	,,	50	Bridge.
(4·83) 5	7	1—4′ 0″ ditto ..	,,	,,	12	3—4′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	,,	,,	12	3 ditto.
		1—4′ 0″ ditto ..	,,	,,	12	3 ditto.
Total 4·83	..	100·75 or 20·9 r.ft. per mile		..	269	or 55·6 r.ft. per mile.
		Bridges of over 100 ft. in length		..	120	
					389	

Allowance of 60 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.		
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. – 4·83 (60′ – 55·6′) = 21.		
∴R. C. pipe culverts = ¼ × 21 = 5·25, say	..	6
Minor bridges up to 30 ft. – ¾ × 21 = 15·75, say	..	15
Total	..	410 r.ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	120
Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	110
Constructing reinforced concrete pipe culverts	..	130
Total	..	410 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	6	1—2′ 0″ steel topped culvert.	No	No	4	1—4′ dia. R. C. pipe culvert.
		1—5′ 0″ plank topped culvert.	,,	,,	15	Bridge.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1—4′ dia. R. C. pipe culvert.
		1—1′ 0″ pipe culvert	,,	,,	4	1 ditto.
		1—3′ 6″ masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 3″ pipe culvert	,,	,,	4	1 ditto.
		1—2′ 0″ masonry culvert.	,,	,,	4	1 ditto.
		1—4′ 0″ trough plated culvert.	,,	,,	15	Bridge.
2	7	1—4′ 0″ masonry culvert.	,,	,,	8	2—4′ dia. R. C. pipe culvert.
		2—4′ 0″ do. ..	,,	,,	12	3 ditto.
		1—5′ 0″ do. ..	,,	,,	15	Bridge.
		1—5′ 0″ do. ..	,,	,,	15	ditto.
3	6	1—115′ 0″ arched culvert.	,,	4,600	..	
		1 new ..	..	..	20	Bridge.
		1 do. ..	..	..	15	ditto.
		1 do. ..	..	..	4	1—4′ dia. R. C. pipe culvert.
Carried over		42′ 9″			143	

Hooghly—Estimate No. 17—*contd.*

Mileage.	Average height of bank above G. L. of unproved road.	Existing bridges or unbridged gaps.	Whether up to specification. B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		42′ 9″			143	
4	5	1—3′ 0″ masonry culvert.	No	No	8	2—4′ dia. R. C. pipe culvert.
		1—5′ 0″ ditto ..	,,	,,	12	3 ditto.
		1—5′ 0″ ditto ..	,,	,,	12	3 ditto.
		1—3′ 0″ ditto ..	,,	,,	8	2 ditto.
		3—10′ 0″ ditto ..	,,	,,	50	Bridge.
(5) 4·83	7	1—4′ 0″ ditto ..	,,	,,	12	3—4′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto ..	,,	,,	12	3 ditto.
		1—4′ 0″ ditto ..	,,	,,	12	3 ditto.
Total 4·83	..	100·75 or 20·9 r.ft. per mile	..	4,600	269 or 115	
					384 or 55·6 r.ft. per mile.	

Allowance of 60 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft.=4·83 (60—55·6)=21 r.ft.

∴R. C. pipe culverts =¼ × 21=5·25, say	..	6
Minor bridges up to 30 ft.=¾ × 21=15·75, say	..	15
Total	..	405 rft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	110
Constructing reinforced concrete pipe culverts	..	130
Reconditioning existing bridge and culverts ..	..	115
Total	..	405 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing unmetalled road.

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
			Rs.			Rs.
		S. ft.			S. ft.	
Land ..	5,280′ × 146′	= 770,880		5,280′ × 146′	= 770,880	
	Deduct existing—5,280′ × 35′	= 184,800		*Deduct* existing—5,280′ × 35′	= 184,800	
		586,080			586,080	
	=40·7 bighas. At Rs. 200 per bigha	..	8,140	=40·7 bighas. At Rs. 200 per bigha	..	8,140
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 319′	= 1,684,320		5,280′ × 302′	= 1,594,560	
	Deduct existing—5,280′ × (19′+31′)/2 × 1·9′	= 250,800		*Deduct* existing—5,280′ × (19′+31′)/2 × 1·9′	= 250,800	
		1,433,520			1,343,760	
	At Rs. 4 per 1,000 c. ft.	..	5,734	At Rs. 4 per 1,000 c. ft.	..	5,375
Turfing ..	5,280′ × 31·5′	=166,320 s. ft.		5,280′ × 31·5′	=166,320 s. ft.	
	At Rs. 3-8 per 1,000 s. ft.	..	582	At Rs. 3-8 per 1,000 s. ft.	..	582
Edging ..	5,280′ × 2	=10,560 r. ft.		5,280′ × 2	=10,560 r. ft.	
	At Rs. 5-8 per 100 r. ft.	..	581	At Rs. 5-8 per 100 r. ft.	..	581
Soling ..	5,280′ × 10′	=52,800 s. ft.		5,280′ × 8′	=42,240 s. ft.	
	At Rs. 11 per 100 s. ft.	..	5,808	At Rs. 6 per 100 s. ft.	..	2,534
Jhama metal ..	5,280′ × 10′ × 4″	=17,600 c. ft.		5,280′ × 8′ × 8″	=28,160 c. ft.	
	At Rs. 23 per 100 c. ft.	..	4,048	At Rs. 23 per 100 c. ft.	..	6,477
Carried over ..			24,893			23,689

Hooghly—Estimate No. 17—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		24,893		23,689
Stone metal	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 50 per 100 c. ft. ..	7,700	....	..
Wearing course	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		38,707		23,929
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,871		2,393
	Total ..	42,578		26,322
	Say ..	42,500		26,500

(*b*) *Entirely new road.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280′ × 135′ = 712,800 s. ft. 49·5 bighas. At Rs. 200 per bigha ..	9,900	5,280′ × 135′ = 712,800 s. ft. = 49·5 bighas. At Rs. 200 per bigha ..	9,900
Earthwork ..	5,280′ × 262′ = 1,383,360 c. ft. At Rs. 4 per 1,000 c. ft. ..	5,533	5,280′ × 247′ = 1,304,160 c. ft. At Rs. 4 per 1,000 c. ft. ..	5,217
Turfing .	5,280′ × 27′ = 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	582	5,280′ × 27′ = 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	582
Edging .	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling .	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal .	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 23 per 100 c. ft. ..	4,018	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 23 per 100 c. ft. ..	6,477
Stone metal .	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 50 per 100 c. ft. ..	7,700	....	..
Wearing course	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		40,266		25,531
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	4,027		2,553
	Total ..	44,293		28,084
	Say ..	44,500		28,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	0·90 mile.	44,500 per mile.	40,050	0·90 mile.	28,000 per mile.	25,200
Improving existing unmetalled road ..	3·93 miles.	42,500 per mile.	1,67,025	3·93 miles.	26,500 per mile.	1,04,145
Constructing major bridges of length from 110 ft. to 300 ft.	120 r.ft.	340 per r.ft.	40,800	..	..	..
Constructing approaches to above ..	2 sets	2,500 each.	5,000	..	..	..
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	110 „	330 per r.ft.	36,300	110 „	330 per r.ft.	36,300
Constructing reinforced concrete pipe culverts.	130 „	300 per r.ft.	39,000	130 „	300 per r.ft.	39,000
Reconditioning existing bridges and culverts.	..	..	..	115 „	40 per r.ft.	4,600
Total ..	..	..	**3,41,175**	..	..	**2,22,245**
Say ..			**3·50 lakhs.**			**2·25 lakhs.**

Estimate No. 18.

Road No. F - Sub-section 1—Chinsurah to Dadpur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	65	200	3·0	2·0	..	..	3	21, 26, 26	36, 40, 38	21	31
2	35	200	1·0	2·0	..	..	3	25	35	21	32
3	35	200	2·0	1·0	..	..	3	25	30	21	33
4	60	150	3·0	1·0	..	..	4	28	40	21	34
5	50	200	1·0	0·0	..	..	3	24	36	21	35
6	40	150	1·0	0·0	..	..	3	26	33	21	36
7	55	200	1·5	.	2·5	0·50	6	28	40	21	37
8	45	150	2·0	..	1·0	0·75	5	23	34	21	36
9	38	200	1·0	..	0·5	0·50	3	20	26	21	37
10	40	150	1·0	0·0	.	..	3	20	26	21	38
11	36	150	1·0	0·0	..	..	3	23	29	21	39
Total 11	499	1,950	17·5	..	.	.	40	266, 268	365, 367	231	388
Average	45·3	177·2	1·59	..		..	3 63	24·2	33·2	21	35 3
Say	45	180	1·6	.	.	..	4	24	33	23	37

Prevailing average rate for—

Item	Unit	Rs.	a.	Item	Unit	Rs.	a.
Earthwork	1,000 c.ft.	1	0	Single brick soling 3″	100 s.ft.	6	0
Turfing	1000 s.ft.	3	8	Double brick soling 6″	100 s.ft.	11	0
Brick-on-end edging	100 r.ft.	5	8				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—5′ 0″ arched masonry culvert ..	No	No	6	2—3′ dia. R. C. pipe culvert.
		2—6′ 3″ R. C. slab culvert ..	,,	,,	15	Bridge.
		1—105′ 0″ trough plated bridge ..	,,	,,	110	Ditto (excluded from total).
		1—10′ 0″ arched masonry culvert ..	,,	,,	15	ditto.
2	3	1—6′ 0″ R. C. slab culvert	,,	,,	15	ditto.
		1—2′ 0″ arched masonry culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
Carried over		37′ 6″			63	
		Bridge of over 100 ft.			110	

Hooghly—Estimate No. 18—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		37′ 6″			63	
		Bridge of over 100 ft.			110	
3	3	1—3′ 10″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ ditto ..	,,	,,	6	2 ditto.
		2—9′ 0″ ditto ..	,,	,,	20	Bridge.
4	4	1—115″ 0″ trough plated bridge ..	,,	,,	120	Ditto (excluded from total).
		2—6′ 0″ ditto ..	,,	,,	15	ditto.
		1—1′ 0″ arched masonry culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—7′ 0″ trough plated culvert ..	,,	,,	15	Bridge.
5	3	1—4′ 0″ arched masonry culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
6	3	1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
7	6	3—5′ 0″ ditto .. 1—11′ 6″ trough plated culvert .. (26′-6″)	,,	,,	40	Bridge.
8	5	2—2′ 0″ hume pipe culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		2—4′ 0″ arched masonry culvert ..	,,	,,	12	3—4′ ditto.
		1—2′ 0″ ditto ..	,,	,,	4	1 ditto.
9	3	1—2′ 0″ iron topped culvert ..	,,	,,	3	1—3′ ditto.
		2—2′ 0″ hume pipe culvert ..	,,	,,	6	2—3′ ditto.
		1—15′ 0″ trough plated culvert ..	,,	,,	20	Bridge.
		2—4′ 0″ R. C. slab culvert ..	,,	,,	15	ditto.
10	3	1—3′ trough plated culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
		2—3′ 9″ iron topped culvert ..	,,	,,	9	3 ditto.
11	3	1—1′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 3″ iron topped culvert ..	,,	,,	6	2 ditto.
		1—new ..	..	..	3	1 ditto.
Total 11	..	182·68 or 16·61 r.ft. per mile		..	291	or 26·45 r.ft. per mile.
		Bridges of over 100 ft. in length ..		..	230	(Excluded from total).
					521	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.		
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 11(30—26·45) = 39·05 r.ft.		
∴ R. C. pipe culverts = ¼ × 39·05 = 9·76, say ..	..	9
Minor bridges up to 30ft. = ¾ × 39·05 = 29·28, say ..	..	30
Total	..	560 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	230
Constructing minor bridges of length above 30 ft.	..	40
Constructing minor bridges of length up to 30 ft. ..	..	160
Constructing reinforced concrete pipe culverts ..	..	130
Total	..	**560 r. ft.**

Hooghly—Estimate No. 18—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—5′ 0″ arched masonry culvert ..	No	No	6	2—3′ dia. R. C. pipe culvert.
		2—6′ 3″ R. C. slab culvert ..	,,	,,	15	Bridge.
		1—105′ 0″ trough plated bridge ..	,,	4,200	..	
		1—10′ 0″ arched masonry culvert ..	,,	400	..	
2	3	1—6′ 0″ R. C. slab culvert ..	,,	240	..	
		1—2′ 0″ arched masonry culvert ..	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
3	3	1—3′ 10″ ditto ..	,,	,,	6	2 ditto.
		1—3′ 0″ ditto ..	,,	,,	6	2 ditto.
		2—9′ 0″ ditto ..	,,	,,	20	Bridge.
4	4	1—115′ 0″ trough plated bridge ..	,,	4,600	..	
		2—6′ 0″ ditto ..	No	No	15	ditto.
		1—4′ 0″ arched masonry culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—7′ 0″ trough plated culvert ..	,,	,,	15	Bridge.
5	3	1—4′ 0″ arched masonry culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
6	3	1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
7	6	{3—5′ 0″ ditto; 1—11′ 6″ trough plated culvert.} 26′ 6″	,,	,,	40	Bridge.
8	5	2—2′ 0″ hume pipe culvert ..	,,	160	..	
		2—4′ 0″ arched masonry culvert ..	No	No	12	3—4′ dia. R. C. pipe culvert.
		1—2′ 0″ ditto ..	,,	,,	4	1 ditto.
9	3	1—2′ 0″ iron topped culvert ..	,,	,,	3	1 3′ ditto.
		2—2′ 0″ hume pipe culvert ..	,,	160	..	
		1—15′ 0″ trough plated culvert ..	No	No	20	Bridge.
		2—4′ 0″ R. C. slab culvert	,,	320	.	
10	3	1—3′ 0″ trough plated culvert ..	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
		2—3′ 9″ iron topped culvert ..	,,	,,	9	3 ditto.
11	3	1—1′ 6″ arched masonry culvert ..	,,	,,	3	1 ditto.
		1—2′ 3″ iron topped culvert ..	,,	,,	6	2 ditto.
		1—new ..	..	..	3	1 ditto.
Total 11	..	182·68 or 16·61 r.ft. per mile		1,280 or	234 32	
					266	or 24·2 r.ft. per mile.
		Bridges of over 100 ft. (reconditioning).		8,800 or	200	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 11(30—24·2) = 63·8 r.ft.

∴ R. C. pipe culverts = ¼ × 63·8 = 15·95, say ..	..	15
Minor bridges up to 30 ft. = ¾ × 63·8 = 47·85, say ..	..	50
Total	..	551 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	40
Constructing minor bridges of length up to 30 ft. ..	..	135
Constructing reinforced concrete pipe culverts ..	..	124
Reconditioning existing bridges and culverts ..	..	252
Total	..	551 r. ft.

Hooghly—Estimate No. 18—*concld.*

Part (3) Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 45′	237,600		*Deduct* existing— 5,280′ × 45′ =	237,600	
		353,760			353,760	
	24·56 bighas. At Rs. 180 per bigha	..	4,421	24·56 bighas. At Rs. 180 per bigha	..	4,421
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— 5,280′ × $\frac{24' + 33'}{2}$ × 1·6′ =	240,768		*Deduct* existing— 5,280′ × $\frac{24' + 33'}{2}$ × 1·6′ =	240,768	
		609,312			551,232	
	At Rs. 4 per 1,000 c.ft.	..	2,437	At Rs. 4 per 1,000 c.ft.	..	2,205
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 23 per 100 c.ft.	..	4,048	At Rs. 23 per 100 c.ft.	..	6,477
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400		....		..
	At Rs. 37 per 100 c.ft.	..	5,698			
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft.	..	5,874			
Posts and pillars	40 nos. at Rs. 6 each		240	40 nos. at Rs. 6 each	..	240
			29,440			16,791
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,944			1,679
	Total	..	32,384			18,470
	Say	..	32,500			18,500

Part (4) Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	11·0 miles.	32,500 per mile.	3,57,500	11·0 miles.	18,500 per mile.	2,03,500
Constructing major bridges of length from 110 ft. to 300 ft.	230 r.ft.	340 per r.ft.	78,200	..	..	..
Constructing approaches to above ..	4 sets	2,500 each.	10,000	..	..	..
Constructing minor bridges of length above 30 ft.	40 r.ft.	260 per r.ft.	10,400	40 r.ft.	260 per r.ft.	10,400
Constructing minor bridges of length up to 30 ft.	160 r.ft.	330 per r.ft.	52,800	135 r.ft.	330 per r.ft.	44,550
Constructing reinforced concrete pipe culverts.	130 r.ft.	300 per r.ft.	39,000	124 r.ft.	300 per r.ft.	37,200
Reconditioning existing bridges and culverts.	..	..	..	252 r.ft.	40 per r.ft.	10,080
Total ..	..	..	5,47,900	..	..	3,05,730
Say ..	..	..	**5·50 lakhs.**	..	..	**3·25 lakhs.**

ESTIMATE No. 19.

Road No. F—Sub-section 2—Dadpur to Bhanderhati.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H.F.L.: Above.	Height above or below H.F.L.: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
					Metalled.						
1	40	150	1·5	0·5	..	..	3	23	30	21	33
2	38	150	2·0	2·0	..	..	3	21	26	21	32
3	46	150	2·5	2·0	..	..	3	22	35	21	31
4	40	150	2·5	2·0	..	..	3	22	35	21	30
5	34	150	2·5	2·0	..	..	3	21	28	21	29
Total 5	198	750	11·0	..	..	..	15	109	154	105	155
Average	39·6	150	2·2	..	..	..	3	21 8	30 8	21	31
Say ..	39	..	..	..	..	..	..	21	30	23	32
					New construction.						
6	..	100	..	..	2	1	4	..	..	21	30
7	..	100	..	..	2	1	4	..	..	21	31
8	..	100	..	..	2	1	4	.	.	21	32
Total 3	..	300	..	..	..	..	12	..	..	63	93
Average	..	100	..	..	..	..	4	..	..	21	31
Say ..	..	..	..	..	..	..	..	..	..	23	32

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	1,000 c.ft.	4 0	Single brick soling 3" ..	100 s.ft.	6 0
Turfing	1,000 s.ft.	3 8	Double brick soling 6" .	100 s.ft.	11 0
Brick-on-end edging ..	100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type
1	2	3	4	5	6	7
	Ft.					
1	3	1—1′ 6″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
		2—2′ 0″ hume pipe culvert	,,	,,	6	2 ditto.
2	3	1—2′ 6″ arched masonry culvert.	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	6	2 ditto.
		2—6′ 0″ ditto ..	,,	,,	20	Bridge.
3	3	6—20′ 0″ trough plated bridge.	,,	,,	150	Ditto (excluded from total).
		1—1′ 6″ hume pipe culvert	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
		1—3′ 0″ R. C. slab culvert	,,	,,	6	2 ditto.
4	3	2—2′ 0″ hume pipe culvert	,,	,,	6	2 ditto.
		2—5′ 0″ arched masonry culvert.	,,	,,	15	Bridge.
		1—1′ 6″ hume pipe culvert	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
5	3	1—1′ 6′ ditto ..	,,	,,	6	2 ditto.
		3—4′ 0″ arched masonry culvert.	,,	,,	30	Bridge.
		E. I. Ry. sub-way bridge	,,	,,	25	ditto.
Carried over ..		76′ 0″			177	
		Bridge of over 100 ft.		..	150	

Hooghly—Estimate No. 19—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. — R.ft.	Replacement proposals in r.ft. — Type.
1	2	3	4	5	6	7
	Ft.					
		Bridge of over 100 ft.			150	
Brought forward		76′ 0″		..	177	
6	4	Road side drain ..	No	No	8	2—4′ dia. R. C. pipe culvert.
		New construction ..	..	..	6	2—3′ ditto.
		Ditto ..	..	..	6	2′ ditto.
7	4	Ditto ..	..	..	6	2′ ditto.
		1—100′ 0″ khal unbridged	..	..	50	Bridge.
		New construction ..	..	..	6	2×3′ dia. R. C. pipe culvert.
8	4	Ditto ..	..	..	6	2′ ditto.
		Ditto ..	..	..	6	2′ ditto.
Total 8		176 or 22 r.ft. per mile	..	..	271 or 33·88 r.ft. per mile.	
		Bridges of over 100 ft. in length		..	150 (Excluded from total.)	

Allowance of 40 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. 8(40 − 33·88) = 48·8.

∴ R. C. pipe culverts = ¼ × 48·8 = 12·2, say ..	..	12
Minor bridges up to 30 ft. ¾ × 48·8 = 36·6, say ..	..	40
Total	..	473 r.ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	150
Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	130
Constructing reinforced concrete pipe culverts	..	143
Total	..	473 r.ft.

Part (2) (b) Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. — R. ft.	Replacement proposals in r. ft. — Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—1′ 6″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
		2—2′ 0″ hume pipe culvert	,,	,,	6	2 ditto.
2	3	1—2′ 6″ arched masonry culvert.	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	6	2 ditto.
		2—6′ 0″ ditto ..	,,	,,	20	Bridge.
3	3	6—20′ 0″ trough plated bridge (total length 142 ft.).	,,	5,680	..	(Excluded from total.)
		1—1′ 6″ hume pipe culvert	,,	No	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
		1—3′ 0″ R. C. slab culvert	,,	,,	6	2 ditto.
4	3	2—2′ 0″ hume pipe culvert	,,	,,	6	2 ditto.
		2—5′ 0″ arched masonry culvert.	,,	,,	15	Bridge.
		1—1′ 6″ hume pipe culvert	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
5	3	1—1′ 6″ ditto ..	,,	,,	6	2 ditto.
		3—4′ 0″ arched masonry culvert.	..	,,	30	Bridge.
		E. I. Ry. sub-way bridge (Roadway 11 ft.).	..	440	..	
Carried over ..		65′ 0″		440	152	
		Reconditioning of bridges of over 100 ft.		5,680		

Hooghly—Estimate No. 19—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward	..	65′ 0″		440	152	
		Reconditioning of bridges of over 100 ft.		5,680		
6	4	Road side drain ..	No	No	8	2—4′ dia. R. C. pipe culvert.
		New construction ..	,,	,,	6	2 - 3′ ditto.
		Ditto ..	,,	,,	6	2′ ditto.
7	4	Ditto ..	,,	,,	6	2′ ditto.
		1—100′ 0″ khal unbridged	,,	,,	50	Bridge.
		1 new construction ..	,,	,,	6	2 —3′ dia. R. C. pipe culvert.
8	4	Ditto ..	,,	,,	6	2′ ditto.
		Ditto ..	,,	,,	6	2′ ditto.
Total 8		165 or 20·62 r.ft. per mile		440 or	246 11 257	or 32·13 r.ft. per mile.
		Reconditioning bridges of over 100 ft. in length		5,680 or	142	

Allowance of 40 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft.—8(40—32·1)=63·2 r.ft.

∴ R. C. pipe culverts=¼×63·2=15·8, say	..	15
Minor bridges up to 30 ft.=¾×63·2=47·4, say	..	50
Total	..	464 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	115
Constructing reinforced concrete pipe culverts	..	146
Reconditioning existing bridges and culverts	..	153
Total	..	464 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′×99′ =	522,720		5,280′×99′ =	522,720	
	Deduct existing—			*Deduct* existing		
	5,280′×39′ =	205,920		5,280′×39′ =	205,920	
		316,800			316,800	
	=22 bighas at Rs. 150 per bigha		3,300	=22 bighas at Rs. 150 per bigha ..		3,300
		C. ft.			C. ft.	
Earthwork ..	5,280′×117′ =	617,760		5,280′×108′ =	570,240	
	Deduct existing—			*Deduct* existing—		
	$5{,}280' \times \frac{21'+30'}{2} \times 2\cdot2'$ =	296,208		$5{,}280' \times \frac{21'+30'}{2} \times 2\cdot2'$ =	296,208	
		321,552			274,032	
	At Rs. 4 per 1,000 c. ft. ..		1,286	At Rs. 4 per 1,000 c. ft. ..		1,096
Carried over	..		4,586			4,396

Hooghly—Estimate No. 19--*contd.*

Items	Specification A. Details.	Specification A. Cost.	Specification B. Details.	Specification B. Cost.
		Rs.		Rs.
Brought forward	..	4,586		4,396
Turfing ..	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	249	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	249
Edging ..	5,280 × 2′ = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′ × 10′ = 52,800 s. ft. .. .. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	....	..	....	..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft. At Rs. 32 per 100 c. ft. ..	9,856	5,280′ × 8′ × 7″ = 24,640 c. ft. At Rs. 32 per 100 c. ft. ..	7,885
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		27,194		15,885
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	2,719		1,589
	Total ..	29,913		17,474
	Say ..	30,000		17,500

(*b*) *Existing metalled road.*

Items.	Specification A. Details.	S. ft.	Specification A. Cost.	Specification B. Details.	S. ft.	Specification B. Cost.
			Rs.			Rs.
Land ..	5,280′ × 99′ = *Deduct* existing— 5,280′ × 39′ =	522,720 205,920		5,280′ × 99′ = *Deduct* existing— 5,280′ × 39′ =	522,720 205,920	
	= 22 bighas at Rs. 150 per bigha	316,800	3,300	= 22 bighas at Rs. 150 per bigha ..	316,800	3,300
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 117′ = *Deduct* existing— $5{,}280' \times \frac{21'+30'}{2} \times 2{\cdot}2'$ =	617,760 296,208		5,280′ × 108′ = *Deduct* existing— $5{,}280' \times \frac{21'+30'}{2} \times 2{\cdot}2'$ =	570,240 296,208	
	At Rs. 4 per 1,000 c. ft. ..	321,552	1,286	At Rs. 4 per 1,000 c. ft. ..	274,032	1,096
Turfing ..	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..		249	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..		249
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581
Soling ..	5,280′ × 2′ = 10,560 s. ft. At Rs. 11 per 100 s. ft. ..		1,162	....		..
Jhama metal ..	....		..	....		..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft. At Rs. 32 per 100 c. ft. ..		9,856	5,280′ × 8′ × 7″ = 24,640 c. ft. At Rs. 32 per 100 c. ft. ..		7,885
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			22,548			13,351
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,255			1,335
	Total ..		24,803			14,686
	Say ..		25,000			14,500

Hooghly—Estimate No. 19—*concld.*

(*c*) *Entirely new road.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280′×112′ = 591,360 s. ft. = 41·06 bighas. At Rs. 100 per bigha ..	4,106	5,280′×112′ = 591,360 s. ft. = 41·06 bighas. At Rs. 100 per bigha ..	4,106
Earthwork ..	5,280′×161′ = 850,080 c. ft. At Rs. 4 per 1,000 c. ft. ..	3,400	5,280′×150′ = 792,000 c. ft. At Rs. 4 per 1,000 c. ft. ..	3,168
Turfing ..	5,280′×18′ = 95,040 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	333	5,280′×18′ = 95,040 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	333
Edging ..	5,280′×2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′×2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′×10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′×8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	....	..	....	..
Stone metal ..	5,280′×10′×7″ = 30,800 c. ft. At Rs. 32 per 100 c. ft. ..	9,856	5,280′×8′×7″ = 24,640 c. ft. At Rs. 32 per 100 c. ft. ..	7,885
Wearing course ..	5,280′×10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		30,198		18,847
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,020		1,885
	Total ..	33,218		20,732
	Say ..	33,500		21,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	3 miles.	33,500 per mile.	1,00,500	3 miles.	21,000 per mile.	63,000
Improving existing metalled road ..	2 and 3 miles.	30,000 and 25,000 per mile.	60,000 and 75,000	2 and 3 miles.	17,500 and 14,500 per mile.	35,000 and 43,500
Constructing major bridges of length from 110 ft. to 300 ft.	150 r. ft.	340 per r. ft.	51,000	..	..	..
Constructing approaches to above ..	2 sets.	2,500 each.	5,000	..	..	..
Constructing minor bridges of length above 30 ft.	50 r. ft.	260 per r. ft.	13,000	50 r. ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	130 r. ft.	330 per. r. ft.	42,900	115 r. ft.	330 per r. ft.	37,950
Constructing reinforced concrete pipe culverts.	143 r. ft.	300 per r. ft.	42,900	146 r. ft.	300 per r. ft.	43,800
Reconditioning existing bridges and culverts.	..	..	..	153 r. ft.	40 per r. ft.	6,120
Total ..			3,90,300			2,42,370
Say ..			4·0 lakhs.			2·5 lakhs.

ESTIMATE No. 20.

Road No. G Sub-section 1 —Bhanderhati to Tarakeswar.

Part (1) Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
Ft.		Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
					New construction.						
1	..	150	..	..	..	..	3	..	..	21	36
2	..	150	..	..	..	..	3	..	..	21	35
3	..	150	..	..	..	..	3	..	..	21	34
4	..	150	..	..	..	..	3	..	..	21	33
5	..	150	..	..	4	0·5	6	..	..	21	32
(6) 5·5	..	150	..	..	6	0·5	8	..	..	21	31
Total 5·5	..	900	..	..	..	..	26	..	..	126	201
Average	..	150	..	..	..	..	4·3	..	..	21	33·5
Say	..	..	..	..	..	..	5	..	..	23	35
					Unmetalled.						
From 5·5 to 6	33	200	3	..	..	..	5	22	33	21	31
Total 0·5	33	200	3	..	..	..	5	22	33	21 say 23	31 say 32

Prevailing average rate for —

Item	Unit	Rs. a.	Item	Unit	Rs. a.
Earthwork ..	Per 1,000 c. ft.	4 0	Single brick soling 3″	Per 100 s. ft.	6 0
Turfing ..	Per 1,000 r. ft.	3 8	Double brick soling 6″	Per 100 s. ft.	11 0
Brick-on-end edging	Per 100 r. ft.	5 8			

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—New construction ..	No	No	25	Bridge.
2	3	1—50′ 0″ low land unbridged	..	..	20	ditto.
		1—200′ 0″ Kananadi unbridged.	..	..	60	ditto.
		1—New construction ..	..	..	15	ditto.
3	3	Ditto ..	..	..	15	ditto.
4	3	Ditto ..	..	..	15	ditto.
		1—600′ 0″ Kana Damodar unbridged.	..	..	120	ditto (excluded from total).
Carried over ..			..		150	
		Bridges of over 100 ft.			120	

Hooghly—Estimate No. 20—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
		Bridge of over 100 ft.			120	
Brought forward					150	
5	6	1—New construction ..	..	..	9	3—3′ dia. R. C. pipe culvert.
		Ditto ..	..	..	20	Bridge.
5·5	8	Ditto ..	..	..	6	2 3′ dia. R. C. pipe culvert.
		Ditto ..	..	..	20	Bridge.
6	5	1—12′ 0″ plank-topped culvert.	No	No	30	ditto.
		2—12′ 0″ ditto ..	„	„	50	ditto.
		1—2′ 0″ hume pipe culvert	„	„	8	2—4′ dia. R. C. pipe culvert.
		1 2′ 0″ ditto ..	„	„	6	2 3′ ditto.
Total 6	..		..	..	299	or 19·83 r. ft. per mile.
		Bridges of over 100 ft. in length			120	

Allowance of 55 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. — 6 × 55′ − 299′ — 31 r. ft.

∴ R. C. pipe culverts — ¼ × 31′ = 7·75′, say	..	9
Minor bridges up to 30 ft. — ¾ × 31′ = 23·25, say	..	25
Total	..	453 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	120
Constructing minor bridges of length above 30 ft.	..	110
Constructing minor bridges of length up to 30 ft.	..	185
Constructing reinforced concrete pipe culverts	..	38
Total	..	453 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Entirely new road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Land ..	5,280′ × 124′ = 654,720 s. ft. = 45·47 bighas. At Rs. 150 per bigha ..	6,821	5,280′ × 124′ = 654,720 s. ft. = 45·47 bighas. At Rs. 150 per bigha ..	6,821
Earthwork ..	5,280′ × 209′ = 1,103,520 c. ft. At Rs. 4 per 1,000 c. ft. ..	4,414	5,280′ × 196′ = 1,034,880 c. ft. At Rs. 4 per 1,000 c. ft. ..	4,140
Turfing ..	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft.	416	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	416
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	....	..	....	..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft. At Rs. 35 per 100 c. ft. ..	10,780	5,280′ × 8′ × 7″ = 24,640 c. ft. At Rs. 35 per 100 c. ft. ..	8,624
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft.	5,874	.... ..	
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		34,934		23,356
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,493		2,336
	Total ..	38,427		25,692
	Say ..	38,500		26,000

Hooghly—Estimate No. 20—*concld.*

(b) Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 124′ =	654,720		5,280′ × 124′ =	654,720	
	Deduct existing—			*Deduct* existing—		
	5,280′ × 33′ =	174,240		5,280′ × 33′ =	174,240	
		480,480			480,480	
	= 33·37 bighas at Rs. 200 per bigha		6,674	= 33·37 bighas at Rs. 200 per bigha		6,674
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 207′ =	1,103,520		5,280′ × 196′ =	1,034,880	
	Deduct existing—			*Deduct* existing—		
	$5,280' \times \frac{22'+33'}{2} \times 3' =$	435,600		$5,280' \times \frac{22'+33'}{2} \times 3' =$	435,600	
		667,920			667,920	
	At Rs. 4 per 1,000 c. ft. ..		2,672	At Rs. 4 per 1,000 c. ft. ..		2,397
Turfing ..	5,280′ × 22·5′ = 118,800 s. ft.			5,280′ × 22·5′ = 118,800 s. ft.		
	At Rs. 3-8 per 1,000 s. ft.		416	At Rs. 3-8 per 1,000 s. ft. ..		416
Edging ..	5,280′ × 2 = 10,560 r. ft.			5,280′ × 2 = 10,560 r. ft.		
	At Rs. 5-8 per 100 r. ft. ..		581	At Rs. 5-8 per 100 r. ft. ..		581
Soling ..	5,280′ × 10′ = 52,800 s. ft.			5,280′ × 8′ = 42,240 s. ft.		
	At Rs. 11 per 100 s. ft. ..		5,808	At Rs. 6 per 100 s. ft. ..		2,534
Jhama metal ..	....		..	....		..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft.			5,280′ × 8′ × 7″ = 24,640 c. ft.		
	At Rs. 32 per 100 c. ft. ..		9,856	At Rs. 32 per 100 c. ft. ..		7,885
Wearing course ..	5,280′ × 10′ = 52,800 s. ft.					
	At Rs. 11-2 per 100 s. ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			32,121			20,727
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,212			2,073
	Total ..		35,333			22,800
	Say ..		35,500			23,000

Part (4) Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	5·5 miles.	38,500 per mile.	2,11,750	5·5 miles.	26,000 per mile.	1,43,000
Improving existing unmetalled road ..	0·5 mile.	35,500 per mile.	17,750	0·5 mile.	23,000 per mile.	11,500
Constructing major bridges of length from 110 ft. to 300 ft. ..	120 r. ft.	340 per r. ft.	40,800	120 r. ft.	340 per r. ft.	40,800
Constructing approaches to above ..	2 sets.	2,500 each.	5,000	2 sets.	2,500 each.	5,000
Constructing minor bridges of length above 30 ft.	110 r. ft.	260 per r. ft.	28,600	110 r. ft.	260 per r. ft.	28,600
Constructing minor bridges of length up to 30 ft.	185 r. ft.	330 per r. ft.	61,050	185 r. ft.	330 per r. ft.	61,050
Constructing reinforced concrete pipe culverts	38 r. ft.	300 per r. ft.	11,400	38 r. ft.	300 per r. ft.	11,400
Total ..			3,76,350			3,01,350
Say ..			4·0 lakhs.			3·25 lakhs.

ESTIMATE No. 21.

Road No. G—Sub-section 2—Tarakeswar to Champadanga.

Part (1) —Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
	Ft.	Rs.	Ft.			Mile.	Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	50	150	4	..	..	0·75	6	14	22	16 0	35 4
2	50	150	4	..	..	1·00	6	17	25	16 0	36 8
3	45	150	4	..	..	1·00	6	17	25	16 0	37 8
4	35	150	1	..	..	1·00	3	14	16	16 0	38 8
4·5	30	150	1	..	..	1·00	3	14	16	16 0	39 8
Total 4·5	210	750	14	..	..	..	24	76	104	80 0	187 4
Average	44	150	2·8	..	..	..	4·8	15·2	20·8	..	37 7
Say	..	175	..	..	..	..	5	15	21	16 0	38 0

Analysis of rates of stone metal for 100 c. ft.

		Rs. a.
Cost of stone at quarry at Pakur ..	..	5 8
Railway frieght from Pakur to Tarakeswar	..	15 12
Unloading, etc.	..	2 0
Stacking	..	0 8
Consolidation	..	6 0
		29 12
Contractor's profit at 10 per cent.	..	2 15
Say	..	32 12
Carting for 1st mile	..	2 8
		35 4
Carting for 2nd mile ..	..	1 4
		36 8

Re. 1 is added for extra mileage of carting.

Prevailing average rate for—		Rs. a.			Rs. a.
Earthwork	1,000 c.ft.	5 0	Single brick soling 3″ ..	100 s.ft	6 0
Turfing	1,000 s.ft.	2 8	Double brick soling 6″ ..	100 s.ft.	11 0
Brick-on-end edging ..	100 s.ft.	3 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	6	1—2′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—5′ 0″ arched masonry culvert ..	„	„	8	2—4′ ditto.
		1—2′ 0″ pipe culvert ..	„	„	3	1—3′ ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
		1—3′ 0″ arched masonry culvert ..	„	„	3	1 ditto.
		1—2′ 0″ pipe culvert ..	„	„	3	1 ditto.
2	6	1—5′ 0″ arched masonry culvert ..	„	„	8	2—4′ ditto.
		2—1′ 6″ pipe culvert ..	„	„	3	1—3′ ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
Carried over		28′ 0″			40	

Hooghly—Estimate No. 21—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		28′ 0″			40	
3	6	2—20′ 0″ trough plated bridge ..	No	No	40	Bridge.
		1—5′ 0″ arched masonry culvert ..	,,	,,	8	2—4′ dia R. C. pipe culvert.
		1—2′ 0″ R. C. pipe culvert	,,	,,	3	1—3′ ditto.
		1—2′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
4	3	1—1′ 6″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 0″ R. C. pipe culvert	,,	,,	3	1 ditto.
		1—5′ 0″ arched masonry culvert ..	,,	,,	8	2—4′ ditto.
4·5	3	Nil.				
Total 4·5		87·5 or 19·5 r.ft. per mile			111	or 24·7 r.ft. per mile.

Allowance of 35 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. =4·5 (35′—24·7′)=46·35, say 48 r.ft.

∴R. C. pipe culverts—¼ × 48′=12 r.ft., say	.. ..	12
Minor bridges up to 30 ft.=¾ × 48′=36 r.ft., say	.. ..	40
Total	..	163 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	40
Constructing minor bridges of length up to 30 ft.	..	40
Constructing reinforced concrete pipe culverts	..	83
Total	..	163 r. ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	6	1—2′ 0″ pipe culvert ..	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—5′ 0″ arched masonry culvert ..	,,	200	..	..
		1—2′ 0″ pipe culvert ..	No	No	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—3′ 0″ arched masonry culvert ..	,,	120	..	..
		1—2′ 0″ pipe culvert	No	No	3	1 ditto.
Carried over		16′ 0″		320	12	

Hooghly—Estimate No. 21—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		16′ 0″		320	12	
2	6	1—5′ 0″ arched masonry culvert ..	No	200	..	..
		2—1′ 6″ pipe culvert ..	"	120	..	..
		1—2′ 0″ ditto ..	"	No	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 0″ ditto ..	"	"	3	1 ditto.
3	6	2×20′ 0″ trough plated bridge ..	"	1,600	..	..
		1—5′ 0″ arched masonry culvert ..	"	200	..	..
		1—2′ 0″ R. C. pipe culvert	"	No	3	1 ditto.
		1—2′ 0″ pipe culvert ..	"	"	3	1 ditto.
		1—2′ 0″ ditto ..	"	"	3	1 ditto.
4	3	1—1′ 6″ ditto ..	"	"	3	1 ditto.
		1—2′ 0″ R. C. pipe culvert	"	"	3	1 ditto.
		1—5′ 0″ arched masonry culvert ..	"	200	..	..
4·5	3	Nil.				
Total 4·5		87·5 or 19·5 r.ft. per mile.	..	2,640	33	
				or	66	
					99	or 22 r.ft. per mile.

Allowance of 35 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. =4·5 (35′—22′)=58·5′, say 60 r.ft.

∴R. C. pipe culverts=¼×60=15, say ..	..	..	16
Minor bridges up to 30 ft. =¾×60=45, say	..	..	45
	Total	..	160 r. ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	45
Constructing reinforced concrete pipe culverts	..	49
Reconditioning existing bridges and culverts	..	66
Total	..	160 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
		S.ft.			S. ft.	
Land ..	5,280′×124′ =	654,720		5,280′×124′ =	654,720	
	Deduct existing 5,280′×44′ =	232,320		*Deduct* existing 5,280′×44′ =	232,320	
		422,400			422,400	
	=29·4 bighas at Rs. 175 per bigha ..		5,145	=29·4 bighas at Rs. 175 per bigha ..		5,145
		C.ft.			C.ft.	
Earthwork ..	5,280′×209′ =	1,103,520		5,280′×196′ =	1,034,800	
	Deduct existing— 5,280′×36′/2×2·8′ =	266,112		*Deduct* existing— 5,280′×36′/2×2·8′ =	266,112	
		837,408			768,688	
	At Rs. 5 per 1,000 c.ft. ..		4,187	At Rs. 5 per 1,000 c.ft. ..		3,844
Carried over			9,332			8,889

Hooghly—Estimate No. 21—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought forward			9,332			8,989
		S.ft.			S.ft.	
Turfing ..	5,280′ × 22·5′ =	118,800		5,280′ × 22·5′ =	118,800	
	At Rs. 2-8 per 1,000 s.ft.	..	297	At Rs. 2-8 per 1,000 s.ft.	..	297
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 3-8 per 100 r.ft.	..	370	At Rs. 3-8 per 100 r.ft.	..	370
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 16 per 100 c.ft,	..	2,816	At Rs. 16 per 100 c.ft.	..	4,506
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 38 per 100 c.ft.	..	5,852	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			30,589			16,936
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	..	3,059			1,694
	Total	..	33,648			18,630
	Say	..	34,000		Say ..	19,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	4·5 miles.	34,000 per mile.	1,53,000	4·5 miles.	19,000 per mile.	85,500
Constructing minor bridges of length above 30 ft.	40 r.ft.	260 per r.ft.	10,400	..	..	..
Constructing minor bridges of length up to 30 ft.	40 r.ft.	330 per r.ft.	13,200	45 r.ft.	330 per r.ft.	14,850
Constructing reinforced concrete pipe culverts	83 r.ft.	300 per r.ft.	24,900	49 r.ft.	300 per r.ft.	14,700
Reconditioning existing bridges and culverts	..	..	..	66 r.ft.	40 per r.ft.	2,640
Total ..			2,01,500			1,17,690
Say ..			2·25 lakhs.			1·25 lakhs.

ESTIMATE No. 22.

Road No. H—Sub-section 1—Dadpur to Dwarbasini.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	15	150	1·35	0·33	..	..	3	12	15	21	34
2	17	100	2·15	0·50	..	..	4	12	17	21	35
3	19	150	1·75	0·00	..	..	4	14	19	21	36
4	24	150	2·50	1·50	..	..	3	16	24	21	37
4·13	18	100	4·00	3·25	..	..	4	12	18	21	38
Total 4·13	93	650	11·75	..	..	..	18	66	93	105	180
Average ..	18·6	130	2·35	..	..	..	3·6	13·2	18·6	21	36
Say ..	18	..	..	..	..	..	4	13	18	23	37

Prevailing average rate for—

Item	Unit	Rs.	a.	Item	Unit	Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3″ ..	100 s.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6″ ..	100 s.ft.	11	0
Brick-on-end edging ..	100 r.ft.	5	8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road. (Ft.)	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	3	2—6′ 0″ masonry culvert	No	No	20	Bridge.
2	4	1—1′ 6″ pipe culvert ..	„	„	6	2—3′ dia. R. C. pipe culvert.
		1—1′ 6″ ditto. ..	„	„	6	2 ditto.
		1—3′ 0″ masonry culvert	„	„	6	2 ditto.
3	4	1—5′ 3″ ditto. ..	„	„	15	Bridge.
		1—1′ 6″ pipe culvert ..	„	„	6	2—3′ dia. R. C. pipe culvert.
4	3	1—1′ 6″ ditto. ..	„	„	6	2 ditto.
4·13	4	1—2′ 0″ ditto. ..	„	„	6	2 ditto.
Total 4·13	..	28·25 or 6·84 r.ft. per mile			71	or 17·2 r.ft. per mile.

Allowance of 20 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 4·13 (20—17·2) = 11·56.

∴ R. C. pipe culverts = 11·56, say	12	
Minor bridges up to 30 ft.—Nil	..	
Total ..	83	r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	35	
Constructing reinforced concrete pipe culverts ..	48	
Total ..	**83**	**r.ft.**

Hooghly—Estimate No. 22—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
		S.ft.			S.ft.	
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 18′ =	95,040		*Deduct* existing— 5,280′ × 18′ =	95,040	
		496,320			496,320	
	= 34·46 bighas at Rs. 130 per bigha ..	..	4,479	= 34·46 bighas at Rs. 130 per bigha ..	..	4,479
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— 5,280′ × 31′/2 × 2·35′ =	192,324		*Deduct* existing— 5,280′ × 31′/2 × 2·35′ =	192,324	
		657,756			599,676	
	At Rs. 4 per 1,000 c.ft.	..	2,631	At Rs. 4 per 1,000 c.ft.	..	2,398
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 1,000 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 23 per 100 c.ft.	..	4,048	At Rs. 23 per 100 c.ft.	..	6,477
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ —	15,400				
	At Rs. 37 per 100 c.ft.	..	5,698	....	..	
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....	..	
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			29,692			17,042
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,969			1,704
		Total	32,661			18,746
		Say,	33,000			19,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	4·13 miles.	33,000 per mile.	1,36,290	4·13 miles.	19,000 per mile.	78,470
Constructing minor bridges of length up to 30 ft.	35 r.ft.	330 per r.ft.	11,550	35 r.ft.	330 per r.ft.	11,550
Constructing reinforced concrete pipe culverts	48 r.ft.	300 per r.ft.	14,400	48 r.ft.	300 per r.ft.	14,400
Total ..			1,62,240			1,04,420
Say ..			**1·75 lakhs.**			**1·25 lakhs.**

ESTIMATE No. 23.

Road No. H—Sub-section 2—Dwarbasini to Pandua.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
					New construction.						
0·75	..	100	..	..	2	0·75	4	..	..	21	36
Total 0·75	..	100	..	..	..	..	4	..	..	21	36
Say	..	..	..	..	..	..	..	..	..	23	37
					Unmetalled.						
1	20	100	2·00	0·75	..	..	3	17	20	21	35
2	22	100	2·15	2·00	..	..	3	17	22	21	34
3	21	150	2·00	1·50	..	..	3	17	21	21	33
4	16	150	0·85	1·35	..	..	3	13	16	21	32
5	14	100	1·25	0·65	..	..	3	14	14	21	31
6	19	100	2·00	0·65	..	..	3	15	19	21	30
7	19	150	1·85	1·16	..	..	3	13	19	21	29
7·4	21	150	1·00	..	2·00	0·40	5	20	21	21	28
Total 7·4	152	1,000	13·1	..	..	..	26	126	152	68	252
Average	19	125	1·63	..	..	..	3·25	15·75	19	21	31·5
Say	..	..	..	..	..	..	4	15	..	23	33
					Metalled.						
0·50	17	250	3	2·5	..	..	3	10	17	21	28
Total 0·50	17	250	3	..	..	..	3	10	17	21	28
Say	..	..	..	..	..	..	..	..	..	23	29

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	4	1—40′ 0″ gap unbridged	..	..	40	Bridge.
		1—low land	..	..	6	2—3′ dia. R. C. pipe culvert.
		1—450′ 0″ low land developed due to sand quarry	..	..	..	No bridge suggested.
		New construction	..	..	6	2—3′ dia. R. C. pipe culvert.
2	3	1—1′ 6″ C. I. pipe culvert	No	No	3	1 ditto.
		New construction	..	..	3	1 ditto.
		1—2′ 0″ arched masonry culvert	No	No	6	2 ditto.
3	3	1—2′ 0″ ditto.	"	"	6	2 ditto.
		1—2′ 0″ ditto.	"	"	6	2 ditto.
		1—3′ 0″ ditto.	"	"	6	2 ditto.
		1—2′ 0″ ditto.	"	"	6	2 ditto.
		1—2′ 0″ ditto.	"	"	6	2 ditto.
4	3	5—7′ 0″ plank-topped bridge.	"	"	50	Bridge.
Carried over	..	89′ 6″			144	

Hooghly—Estimate No. 23—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		89′ 6″			144	
5	3	1—2′ 0″ arched masonry culvert	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—4′ 0″ ditto. ..	,,	,,	6	2 ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
6	3	2—3′ 0″ masonry culvert	,,	,,	15	Bridge.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
7	3	1—2′ 0 arched masonry culvert	,,	,,	6	2 ditto.
		2—15′ 0″ bridge ..	,,	,,	40	Bridge.
		1—1′ 6″ arched masonry culvert	,,	,,	6	2—3′ dia. R. C. pipe culvert.
8	5	1—2′ 0″ ditto. ..	,,	,,	6	2 ditto.
		New construction ..	..	..	6	2 ditto.
8·65	3	1—1′ 6″ arched masonry culvert.	No	No	6	2 ditto.
		1—1′ 7″ ditto. ..	,,	,,	6	2 ditto.
		2—3′ 0″ ditto. ..	,,	,,	15	Bridge.
Total 8·65		149·2 or 17·3 r.ft. per mile.			268 or 31·2 r.ft. per mile.	

Allowance of 35 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. in length—8·65 (35′—31·2′) —32·68 r.ft.

∴ R. C. pipe culverts = ¼ × 32·68′ = 8·17, say ..	..	9
Minor bridges up to 30 ft. = ¾ × 32·68′ = 24·51, say ..	..	25
Total	..	302 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	130
Constructing minor bridges of length up to 30 ft.	..	55
Constructing reinforced concrete pipe culverts ..	..	117
Total	..	302 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Entirely new road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
	S.ft.	Rs.	S.ft.	Rs.
Land ..	5,280′ × 112′ = 591,360		5,280′ × 112′ = 591,360	
	= 41·06 bighas at Rs. 100 per bigha.	4,106	= 41·06 bighas at Rs. 100 per bigha.	4,106
	C.ft.		C.ft.	
Earthwork ..	5,280′ × 161′ = 850,080 At Rs. 4 per 1,000 c.ft. ..	3,400	5,280′ × 150′ = 792,000 At Rs. 4 per 1,000 c.ft. ..	3,168
	S.ft.		S.ft.	
Turfing ..	5,280′ × 18′ = 95,040 At Rs. 3-8 per 1,000 s.ft. ..	333	5,280′ × 18′ = 95,040 At Rs. 3-8 per 1,000 s.ft. ..	333
	R.ft.		R.ft.	
Edging ..	5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r.ft. ..	581	5,280′ × 2 = 10,560 At Rs. 5-8 per 100 r.ft. ..	581
	S.ft.		S.ft.	
Soling ..	5,280′ × 10′ = 52,800 At Rs. 11 per 100 s.ft. ..	5,808	5,280′ × 8′ = 42,240 At Rs. 6 per 100 s.ft. ..	2,534
Carried over		14,228		10,722

Hooghly—Estimate No. 23—*contd.*

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
			Rs.			Rs.
Brought forward			14,228			10,722
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 23 per 100 c.ft. ..		4,048	At Rs. 23 per 100 c.ft. ..		6,477
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 37 per 100 c.ft. ..		5,698	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			30,088			17,439
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,009			1,744
	Total ..		33,097			19,183
	Say ..		33,000			19,500

(b) Existing unmetalled road.

Items.	Specification A. Details.		Specification A. Cost.	Specification B. Details.		Specification B. Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing— 5,280′ × 19′ =	100,320		*Deduct* existing 5,280′ × 19′ =	100,320	
		491,040			491,040	
	= 34·1 bighas at Rs. 125 per bigha		4,262	34·1 bighas at Rs. 125 per bigha		4,262
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing— $5,280' \times \frac{34'}{2} \times 1 \cdot 63'$ =	146,308		*Deduct* existing— $5,280' \times \frac{34'}{2} \times 1 \cdot 63'$ =	146,308	
		703,772			645,692	
	At Rs. 4 per 1,000 c.ft. ..		2,815	At Rs. 4 per 1,000 c.ft. ..		2,582
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft. ..		333	At Rs. 3-8 per 1,000 s.ft. ..		333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft. ..		5,808	At Rs. 6 per 100 s.ft. ..		2,534
		C.ft.	..		C.ft.	..
Jhama metal ..	....			....		
Stone metal ..	5,280′ × 10′ × 7″ =	30,800		5,280′ × 8′ × 7″ =	24,640	
	At Rs. 33 per 100 c.ft. ..		10,164	At Rs. 33 per 100 c.ft. ..		8,131
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft. ..		5,874			
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			30,077			18,663
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,008			1,866
	Total ..		33,085			20,529
	Say ..		33,000			20,500

Hooghly—Estimate No. 23—*concld.*

(c) *Existing metalled road.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 99′ =	522,720		5,280′ × 99′ =	522,720	
	Deduct existing— 5,280′ × 17′	89,760		*Deduct* existing— 5,280′ × 17′ =	89,760	
		422,960			422,960	
	= 29·4 bighas at Rs. 250 per bigha		7,350	= 29·4 bighas at Rs. 250 per bigha		7,350
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117′ =	617,760		5,280′ × 108′ =	570,240	
	Deduct existing— 5,280′ × 27′/2 × 3′ =	213,840		*Deduct* existing— 5,280′ × 27′/2 × 3′ =	213,840	
		403,920			403,920	
	At Rs. 4 per 1,000 c.ft. ..		1,615	At Rs. 4 per 1,000 c.ft. ..		1,426
		S.ft.			S.ft.	
Turfing ..	5,280′ × 13·5′ =	71,280		5,280′ × 13·5′ =	71,280	
	At Rs. 3-8 per 100 s.ft. ..		250	At Rs. 3-8 per 1000 s.ft. ..		250
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
Soling ..	....		..	....		..
Jhama metal ..	....		..	....		..
		C.ft.			C.ft.	
Stone metal ..	5,280′ × 10′ × 7″ =	30,800		5,280′ × 8′ × 7″ =	24,640	
	At Rs. 29 per 100 c.ft. ..		8,932	At Rs. 29 per 100 c.ft. ..		7,146
		S.ft.			S.ft.	
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft. ..		5,874			
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			24,842			16,993
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,484			1,699
	Total ..		27,326			18,692
	Say ..		27,500			19,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road ..	0·75 mile.	33,000 per mile.	24,750	0·75 mile.	19,500 per mile.	14,625
Improving existing metalled road ..	0·50 mile.	27,500 per mile.	13,750	0·50 mile.	19,000 per mile.	9,500
Improving existing unmetalled road ..	7·4 miles.	33,000 per mile.	2,44,200	7·4 miles.	20,500 per mile.	1,51,700
Constructing approaches for level crossing including gates, etc., near Pandua ..	2 sets.	2,500 each.	5,000	2 sets.	2,500 each.	5,000
Constructing minor bridges of length above 30 ft.	130 r.ft.	260 per r.ft.	33,800	130 r.ft.	260 per r.ft.	33,800
Constructing minor bridges of length up to 30 ft.	55 r.ft.	330 per r.ft.	18,150	55 r.ft.	330 per r.ft.	18,150
Constructing reinforced concrete pipe culverts	117 r.ft.	300 per r.ft.	35,100	117 r.ft.	300 r.ft.	35,100
Total ..			374,750			2,67,875
Say ..			**3·75 lakhs.**			**2·75 lakhs.**

ESTIMATE No. 24.

Road No. H—Sub-section 3—Pandua to Inchura.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs. a.
1	44	150	1·50	1·00	..	..	3	17	18, 22, 20	23	36 4
2	60	150	3·00	1·00	..	..	4	25	50	23	37 8
3	44	150	3·25	1·00	..	..	4	20	35	23	38 8
4	44	150	3·50	1·00	..	..	4	17	33	23	39 8
5	37	150	3·00	0·50	..	..	4	20	35	23	40 8
6	34	150	3·00	1·00	..	..	4	15	25	23	41 8
7	36·5	150	3·25	0·50	..	..	5	18	30	23	42 8
8	29	150	2·50	1·00	..	..	3	18	25	23	43 8
9·15	70	150	4·00	0·25	..	..	6	18	40	23	44 8
Total 9·15	398·5	1,500	27	..	..	..	37	168	291, 293	230	364 4
Average ..	44	150	3	..	..	..	4·04	18	32	23	40 7
Say ..	..	175	..	..	..	..	5	..	..		41 0

Analysis of rate of stone metal for 100 c.ft.

		Rs. a.
Cost of stone at Pakur	..	5 8
Railway freight	..	16 10
Unloading	..	2 10
Stacking	..	0 8
Consolidation	..	6 0
		30 10
Contractor's profit at 10 per cent.	..	3 2
		33 12
Carting for 1st mile	..	2 8
		36 4
Carting for 2nd mile	..	1 4
		37 8

Re. 1 is added for oxtra mileage of carting.

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork	.. 1,000 c. ft.	5 0	Single brick soling 3″	.. 100 s. ft.	6 0
Turfing	.. 1,000 s. ft.	3 0	Double brick soling 6″	.. 100 s. ft.	11 0
Brick-on-end edging	.. 100 r. ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3		4	5	6	7
	Ft.						
1	3	1—3′ 0″	arched masonry culvert.	No	No	3	1 -3′ dia. R. C. pipe culvert.
		2—6′ 0″	ditto ..	"	"	15	Bridge.
2	4	3—4′ 0″	ditto ..	"	"	15	ditto.
		3—4′ 0″	ditto ..	"	"	15	ditto.
3	4	1—2′ 9″	ditto ..	"	"	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 3″	ditto ..	"	"	3	1 ditto.
		1—1′ 3″	ditto ..	"	"	3	1 ditto.
4	4	1—3′ 0″	ditto ..	"	"	3	1 ditto.
		2—3′ 0″	ditto ..	"	"	6	2 ditto.
		2—3′ 9″	ditto ..	"	"	8	2—4′ ditto.
Carried over		61′ 9″				74	

Hooghly—Estimate No. 24—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3		4	5	6	7
	Ft.						
Brought forward		61′ 9″				74	
5	4	3—4′ 0″	arched masonry culvert.	No	No	15	Bridge.
		1—2′ 0″	ditto ..	„	„	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″	pipe culvert ..	„	„	3	1 ditto.
		1 1′ 0″	arched masonry culvert.	„	„	3	1 ditto.
		1—3′ 0″	ditto ..	„	„	3	1 ditto.
6	4	1 5′ 0″ / 1—3′ 0″	ditto ..	„	„	8	2—4′ ditto.
		8′ 0″.					
		1 2′ 0″	pipe culvert	„	„	3	1—3′ ditto.
		1 2′ 0″	arched masonry culvert.	„	„	3	1 ditto.
		2—15′ 9″ / 2—16′ 0″	buckle plated bridge.	„	„	60	Bridge.
		63′ 6″					
		1 2′ 9″	acrhed masonry vert.	„	„	3	1—3′ dia. R. C. pipe culvert.
7	5	2 2′ 0″	pipe culvert ..	„	„	4	1—4′ ditto.
		1 2′ 0″	arched masonry culvert.	„	„	3	1—3′ ditto.
		1—2′ 6″	ditto ..	„	„	3	1 ditto.
8	3	1—13′ 0″	plank-topped bridge.	„	„	15	Bridge.
9	6	1—4′ 0″	trough plated culvert.	„	„	4	1—4′ dia. R. C. pipe culvert.
		1—3′ 0″ / 1—3′ 3″	ditto ..	„	„	6	2—3′ ditto.
		6′ 3″					
		3—4′ 0″	arched masonry culvert.	„	„	15	Bridge.
		1 4′ 0″	trough plated culvert.	„	„	4	1—4′ dia. R. C. pipe culvert.
		2—2′ 9″	ditto ..	„	„	4	1 ditto.
		1—1′ 6″	pipe culvert ..	„	„	3	1—3′ ditto.
9·15	6	1—1′ 9″	acrhed masonry culvert.	„	„	3	1 ditto.
Total 9·15		215·5 or 23·56 r. ft. per mile.				242	or 26·45 r. ft. per mile.

No extra waterway required.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	60
Constructing minor bridges of length up to 30 ft.	..	90
Constructing reinforced concrete pipe culverts	..	92
Total	..	242 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.		Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3		4	5	6	7
	Ft.				Rs		
1	3	1—3′ 0″	arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		2—6′ 0″	ditto ..	„	„	15	Bridge.
2	4	3—4′ 0″	ditto ..	„	„	15	Ditto.
		3—4′ 0″	ditto ..	„	„	15	Ditto.
3	4	1—2′ 9″	ditto ..	„	„	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 3″	ditto ..	„	„	3	1 ditto.
		1—1′ 3″	ditto ..	„	„	3	1 ditto.
Carried over		45′ 3″				57	

Hooghly—Estimate No. 24—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		45′ 3″			57	
4	4	1—3′ 0″ arched masonry culvert.	No	No	3	1—3′dia. R. C. pipe culvert.
		2—3′ 0″ ditto ..	,,	,,	6	2 ditto.
		2—3′ 9″ ditto ..	,,	,,	8	2 4′ ditto.
5	4	3 4′ 0″ ditto ..	,,	,,	15	Bridge.
		1—2′ 0″ ditto ..	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
		1—1′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
		1—3′ 0″ ditto ..	,,	,,	3	1 ditto.
6	4	1—5′ 0″ } 1—3′ 0″ } ditto .. (8′ 0″)	,,	,,	8	2 4′ ditto.
		1—2′ 0″ pipe culvert ..	,,	,,	3	1 3′ ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
		2 15′ 9″ } 2—16′ 0″ } Buckled plated bridge. (63′ 6″)	,,	2,520	..	
		1—2′ 9″ arched masonry culvert.	No	No	3	1—3′ ditto.
7	5	2—2′ 0″ pipe culvert ..	,,	,,	4	1—4′ ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	3	1—3′ ditto.
		1—2′ 6″ ditto ..	,,	,,	3	1 ditto.
8	3	1—13′ 0″, plank-topped bridge.	,,	,,	15	Bridge.
9	6	1—4′ 0″ trough plated culvert.	,,	160	..	
		1—3′ 0″ } 1—3′ 3″ } ditto .. (6′ 3″)	,,	280	..	
		3—4′ 0″ arched masonry culvert.	No	No	15	Ditto.
		1—4′ 0″ trough plated culvert.	,,	160	..	
		2—2′ 9″ ditto ..	,,	210	..	
		1—1′ 6″ pipe culvert ..	,,	No	3	1—3′ dia. R. C. pipe culvert.
9·15	6	1—1′ 9″ arched masonry culvert.	,,	,,	3	1 ditto.
Total 9·15	..	215·5 or 23·56 r.ft. per mile.	..	3,360	164	
				or	84	
					248 or 27·1 r.ft. per mile.	

No extra waterway required.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	90
Constructing reinforced concrete pipe culverts ..	74
Reconditioning existing bridges and culverts ..	84
Total ..	**248 r.ft.**

Hooghly—Estimate No. 24—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280' × 124' =	654,720		5,280' × 124' =	654,720	
	Deduct existing—			*Deduct* existing—		
	5,280' × 44' =	232,320		5,280' × 44' =	232,320	
		422,400			422,400	
	= 29·4 bighas.			= 29·4 bighas.		
	At Rs. 175 per bigha ..		5,145	At Rs. 175 per bigha ..		5,145
		C. ft.			C. ft.	
Earthwork ..	5,280' × 209' =	1,103,520		5,280' × 196' =	1,034,800	
	Deduct existing—			*Deduct* existing—		
	5,280' × $\frac{50'}{2}$ × 3' =	396,000		5,280' × $\frac{50'}{2}$ × 3' =	396,000	
		707,520			638,800	
	At Rs. 5 per 1,000 c. ft. ..		3,538	At Rs. 5 per 1,000 c. ft. ..		3,194
Turfing ..	5,280' × 22·5' =	118,800 s. ft.		5,280' × 22·5' =	118,800 s. ft.	
	At Rs. 3 per 1,000 s. ft.		357	At Rs. 3 per 1,000 s. ft.		357
Edging ..	5,280' × 2 =	10,560 r. ft.		5,280' × 2	10,560 r. ft.	
	At Rs. 5-8 per 100 r. ft. ..		581	At Rs. 5-8 per 100 r. ft. ..		581
		S. ft.			S. ft.	
Soling ..	5,280' × 10' =	52,800		5,280' × 8' =	42,240	
	Deduct existing—			*Deduct* existing—		
	5,280' × $\frac{8'}{2}$ =	21,120		5,280' × 8' =	42,240	
		31,680			Nil.	
	At Rs. 12 per 100 s. ft. ..		3,802			
		C. ft.			C. ft.	
Jhama metal ..	5,280' × 10' × 4" =	17,600		5,280' × 8' × 8" =	28,160	
	At Rs. 23 per 100 c. ft. ..		4,048	*Deduct* existing—		
				5,280' × 8' × 2" =	7,040	
					21,120	
		C.ft.				
Stone metal ..	5,280' × 10' × 3½" =	15,400		At Rs. 23 per 100 c. ft. ..		4,858
	Deduct existing—					
	5,280' × 8' × 2" =	7,040				
		8,360				
	At Rs. 41 per 100 c. ft. ..		3,428	....		..
Wearing course	5,280' × 10'	52,800 s. ft.				
	At Rs. 11-2 per 100 s. ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each		240
			27,013			14,375
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,701			1,438
	Total ..		29,714			15,813
	Say ..		30,000			16,000

Part (4) Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road.	9·15 miles.	30,000 per mile.	2,74,500	9·15 miles.	16,000 per mile.	1,46,400
Constructing minor bridges of length above 30 ft.	60 r. ft.	260 per r. ft.	15,600	..	..	..
Constructing minor bridges of length up to 30 ft.	90 r. ft.	330 per r. ft.	29,700	90 r. ft.	330 per r. ft.	29,700
Constructing reinforced concrete pipe culverts.	92 r. ft.	300 per r. ft.	27,600	74 r. ft.	300 per r. ft.	22,200
Reconditioning existing bridges and culverts.	..	..	..	84 r. ft.	40 per r. ft.	3,360
Total ..			3,47,400			2,01,660
Say ..			3·50 lakhs.			2·25 lakhs.

ESTIMATE No. 25.

Road No. H—Sub-section 4—Inchura to Bakulia.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.								
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
				Above.	Below.						
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
(0·5) 1	35	100	2·0	0·5	..	..	3	24,25,25	35	22	34
2	35	100	2·0	0·5	..	..	3	24,25,25	35	23	33
3	28	100	2·0	1·0	..	..	3	22	28	23	32
4	32	100	1·5	0·5	..	..	3	24	32	22	31
Total 3·5	130	400	7·5	..	..	..	12	94, 96	130	90	130
Average ..	32·5	100	1·87	..	..	..	3	23·5, 24	32·5	22·5	32·5
Say ..	32	..	1·9	..	..	..	..	24	32	23	34

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging		100 r.ft.	5 8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft.	
					R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
(0·5) 1	3	1—4′ 0″ trough plated culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		2—3′ 0 ditto ..	,,	,,	9	3 ditto.
		1—1′ 3″ arched masonry culvert.	,,	,,	3	1 ditto.
2	3	1—1′ 9″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	6	2 ditto.
3	3	1—93′ 0″ suspension bridge	,,	,,	110	Bridge (excluded from total).
		1—1′ 6″ arched masonry culvert.	,,	,,	3	1—3′ dia. R. C. pipe culvert.
		1—3′ 0″ ditto ..	,,	,,	6	2 ditto.
4	3	1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		3—4′ 0″ ditto ..	,,	,,	15	Bridge
		3—3′ 0″ ditto ..	,,	,,	15	ditto.
Total 3·5		44·5 or 12·7 r.ft. per mile.			72	or 20·6 r.ft. per mile.
		Bridges of over 100 ft. in length.			110	

Allowance of 25 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.	
Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 3·5 × 25′ − 72′ = 15·5.	
∴ R. C. pipe culverts = 15·5, say	15
Minor bridges up to 30 ft.	Nil.
Total ..	197 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	110
Constructing minor bridges of length up to 30 ft.	..	45
Constructing reinforced concrete pipe culverts	..	42
Total	..	197 r.ft.

Hooghly—Estimate No. 25—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 100′ =	528,000		5,280′ × 100′ =	528,000	
	Deduct existing— 5,280′ × 32′ =	168,960		*Deduct* existing— 5,280′ × 32′ =	168,960	
		359,040			359,040	
	−25 bighas. At Rs. 100 per bigha ..		2,500	−25 bighas. At Rs. 100 per bigha ..		2,500
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 117′ =	617,760		5,280′ × 108′ =	570,240	
	Deduct existing— $5,280' \times \frac{24'+32'}{2} \times 1\cdot 9'$ =	280,896		*Deduct* existing— $5,280' \times \frac{24'+32'}{2} \times 1\cdot 9'$ =	280,896	
		336,864			289,344	
	At Rs. 4 per 1,000 c.ft. ..		1,347	At Rs. 4 per 1,000 c.ft. ..		1,157
		S.ft.			S.ft.	
Turfing ..	5,280′ × 13·5′ =	71,280		5,280′ × 13·5′ =	71,280	
	At Rs. 3-8 per 1,000 s.ft.		250	At Rs. 3-8 per 1,000 s.ft. ..		250
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.		581	At Rs. 5-8 per 100 r.ft.		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft.		5,808	At Rs. 6 per 100 s.ft.		2,534
Jhama metal ..	....		..	....		..
		C.ft.			C.ft.	
Stone metal ..	5,280′ × 10′ × 7″ =	30,800		5,280′ × 8′ × 7″ =	24,640	
	At Rs. 34 per 100 c.ft.		10,472	At Rs. 34 per 100 c.ft.		8,378
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft.		5,874			
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each		240
			27,072			15,640
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent. ..		2,707			1,564
		Total ..	29,779			17,204
		Say ..	30,000			17,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	3·5 miles	30,000 per mile.	1,05,000	3·5 miles	17,500 per mile.	61,250
Constructing major bridges of length from 110 ft. to 300 ft.	110 r.ft.	340 per r.ft.	37,400	110 r.ft.	340 per r.ft.	37,400
Constructing approaches to above ..	2 sets	2,500 each.	5,000	2 sets	2,500 each.	5,000
Constructing minor bridges of length up to 30 ft.	45 r.ft.	330 per r.ft.	14,850	45 r.ft.	330 per r.ft.	14,850
Constructing reinforced concrete pipe culverts.	42 r.ft.	300 per r.ft.	12,600	42 r.ft.	300 per r.ft.	12,600
Total ..	..	..	1,74,850	..	..	1,31,100
Say ..	..	..	**1·75 lakhs.**	..	..	**1·5 lakhs.**

ESTIMATE No. 26.

Road No. I—Sub-section 1—Somra to Inchura.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	36	150	3·0	1·0	..	..	4	15	20	20 0	35 4
2	40	150	2·0	1·0	..	..	3	13	20	22 0	36 8
3	34	125	2·0	1·0	..	..	3	15	21	23 0	37 8
3·67	50	100	2·0	0·0	..	..	4	16	24	23 12	38 8
Total 3·67	160	525	9·0	..	..	..	14	59	85	88 12	147 12
Average ..	40	131·25	2·25	..	..	..	3·5	14·75	21·25	22 3	36 15
Say ..	..	150	2·2	..	..	..	4	15	21	23 0	37 0

Analysis of rate of stone metal for 100 c.ft.

		Rs. a.
Cost of stone at Pakur	..	5 8
Railway freight	..	15 12
Unloading, etc.	..	2 0
Stacking	..	0 8
Consolidation	..	6 0
		29 12
Contractor's profit at 10 per cent.	..	2 15
	Say ..	32 12
Carting for 1st mile	..	2 8
		35 4
Carting for 2nd mile	..	1 4
		36 8

Re. 1 is added per extra mileage of carting.

Prevailing average rate for—

Item	Unit	Rs. a.	Item	Unit	Rs. a.
Earthwork	.. 1,000 c.ft.	5 0	Single brick soling 3″	.. 100 s.ft.	6 0
Turfing	.. 1,000 s.ft.	3 0	Double brick soling 6″	.. 100 s.ft.	12 0
Brick-on-end edging	100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	4	1—5′ 0″ arched masonry culvert.	No	No	8	2—4′ dia. R. C. pipe culvert.
		1—2′ 6″ ditto ..	,,	,,	3	1—3′ ditto.
2	3	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—3′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 3″ ditto ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
Carried over ..		16′ 9″	..	..	23	

Hooghly—Estimate No. 26—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..		16′ 9″			23	
3	3	1—3′ 9″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. culvert.
3·67	4	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto	,,	,,	3	1 ditto.
Total—3·67		28·5 or 7·77 r.ft. per mile	..	..	38	or 10·3 r.ft. per mile.

Allowance of 15 r.ft per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft.—3·67 (15′—10·3′) 17·25′, say 18.

∴ R. C. pipe culverts ¼ × 18 = 4·5 r.ft., say	..	6
Minor bridges up to 30 ft. ¾ × 18 = 13·5 r.ft., say	..	15
Total	..	59 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	..	15
Constructing reinforced concrete pipe culverts	..	44
Total	..	59 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	4	1—5′ 0″ arched masonry culvert.	No	200	..	
		1—2′ 6″ ditto ..	,,	No	3	1—3′ dia. R. C. pipe culvert.
2	3	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—3′ 0″ ditto ..	,,	120	..	
		1—2′ 3″ ditto ..	,,	No	3	1 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
3	3	1—3′ 9″ ditto ..	,,	,,	3	1 ditto.
3·67	4	1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—4′ 0″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
Total 3·67		28·5 or 7·77 r.ft. per mile	..	320 or	27 8	
					35	or 9·54 r.ft. per mile.

Allowance of 15 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. =3·67(15′—9·54′) =20·0382, say 20.

∴ R. C. pipe culverts—¼ × 20 = 5 r.ft., say	..	6
Minor bridges up to 30 ft. =¾ × 20 = 15	..	15
Total	..	56 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	..	15
Constructing reinforced concrete pipe culverts	..	..	33
Reconditioning existing bridges and culverts	..	..	8
Total		..	56 r.ft.

Hooghly—Estimate No. 26—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ —	591,360		5,280′ × 112′ —	591,360	
	Deduct existing— 5,280′ × 40′ —	211,200		*Deduct* existing— 5,280′ × 40′ —	211,200	
		380,160			380,160	
	= 26·4 bighas. At Rs. 150 per bigha	..	3,960	= 26·4 bighas. At Rs. 150 per bigha	..	3,960
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161 —	850,080		5,280′ × 150′ —	792,000	
	Deduct existing— 5,280′ × 36′/2 × 2·2′ =	209,088		*Deduct* existing— 5,280′ × 36′/2 × 2·2′	209,088	
		640,992			582,912	
	At Rs. 5 per 1,000 c.ft.	..	3,205	At Rs. 5 per 1,000 c.ft.	..	2,915
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′	95,040	
	At Rs. 3 per 1,000 s.ft.		286	At Rs. 3 per 1,000 s.ft.	..	286
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 —	10,560		5,280′ × 2 —	10,560	
	At Rs. 5-8 per 100 r.ft.		581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ —	52,800		5,280′ × 8′ —	42,240	
	At Rs. 12 per 100 s.ft.		6,336	At Rs. 6 per 100 s.ft.	..	2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ —	17,600		5,280′ × 8′ × 8″ —	28,160	
	At Rs. 23 per 100 c.ft.		4,048	At Rs. 23 per 100 c.ft.	..	6,477
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ —	15,400			....	..
	At Rs. 37 per 100 c.ft.	..	5,698			
		S.ft.				
Wearing course	5,280′ × 10′ —	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874		....	..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			30,228			16,993
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,023			1,699
	Total	..	33,251			18,692
	Say	..	33,500			19,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	3·67 miles.	33,500 per mile.	1,22,945	3·67 miles.	19,000 per mile.	69,730
Constructing minor bridges of length up to 30 ft.	15 r.ft.	330 per r.ft.	4,950	15 r.ft.	330 per r.ft.	4,950
Constructing reinforced concrete pipe culverts.	44 r.ft.	300 per r.ft.	13,200	33 r.ft.	300 per r.ft.	9,900
Reconditioning existing bridges and culverts.	..	..	..	8 r.ft.	40 per r.ft.	320
Total ..			1,41,095			84,900
Say ..			**1·5 lakhs.**			**1·0 lakh.**

ESTIMATE No. 27.

Road No. I—Sub-section 2—Somra to Balagarh.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile	Ft.	Ft.	Ft.	Rs.	Rs.
Unmetalled.											
1	22	100	2	1·5	..	..	3	15	22	20	29
2	23	100	2	1·5	..	..	3	18	23	21	29
2·25	16	150	..	1·5	..	..	3	16	16	21	29
Total 2·25	61	350	4	..	..	..	9	19	61	62	87
Average ..	20·3	116·7	1·30	..	..	..	3	16·3	20·3	20·6	29
Say ..	20	117	..	..	..	..	..	16	20	23	30
New construction.											
0·13	..	100	..	..	3	0·13	5	..	..	21	29
Total 0·13	..	100	..	..	..	..	5	..	..	21 say 23	29 say 30

Prevailing average rate for—

Item	Quantity	Rs. a.	Item	Quantity	Rs. a.
Earthwork ..	1,000 c. ft.	4 0	Single brick soling 3″	100 s. ft.	6 0
Turfing ..	1,000 s. ft.	3 8	Double brick soling 6″	100 s. ft.	11 0
Brick-on-end edging	100 r. ft.	5 8			

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications. A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—15′ 0″ plank-topped bridge	No	No	20	Bridge.
		1—1′ 6″ plank-topped culvert	”	”	3	1—3′ dia. R. C. pipe culvert.
		1—1′ 6″ R. C. pipe culvert ..	”	”	3	1 ditto.
		1—1′ 0″ ditto. ..	”	”	3	1 ditto.
		1—2′ 0″ arched masonry culvert.	”	”	3	1 ditto.
		1—2′ 0″ ditto. ..	”	”	3	1 ditto.
Carried over	..	23′ 0″	..	..	35	

Hooghly—Estimate No. 27—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. — R. ft.	Replacement proposals in r. ft. — Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..	23′ 0″				35	
2	3	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 6″ ditto. ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
		1—2′ 0″ ditto. ..	,,	,,	3	1 ditto.
2·25	3	New construction ..	..	,,	6	2 ditto.
2·38	5	ditto.	..	,,	3	1 ditto.
Total 2·38	..	33·5 or 13·95 r. ft. per mile	..	..	62	or 26·2 r. ft. per mile.

Allowance of 30 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 2·38′ × 30 − 62 = 9 r. ft.

∴ R. C. pipe culverts	9
Total ..	71 r. ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft. ..	20
Constructing reinforced concrete pipe culverts	51
Total ..	71 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Existing unmetalled road.

Items.	Specification A. — Details.		Cost.	Specification B. — Details.		Cost.
			Rs.			Rs.
		S. ft.			S. ft.	
Land ..	5,280′ × 99′ =	522,720		5,280′ × 99′ =	522,720	
	Deduct existing— 5,280′ × 20′ =	105,600		*Deduct* existing— 5,280′ × 20′ =	105,600	
		417,120			417,120	
	= 28·96 bighas at Rs. 117 per bigha		3,388	= 28·96 bighas at Rs. 117 per bigha		3,388
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 117′ =	617,760		5,280′ × 108′ =	570,240	
	Deduct existing— $5,280' \times \frac{36'}{2} \times 1\cdot3'$ =	126,720		*Deduct* existing— $5,280' \times \frac{36'}{2} \times 1\cdot3'$ =	126,720	
		491,040			443,520	
	At Rs. 4 per 1,000 c. ft. ..		1,964	At Rs. 4 per 1,000 c. ft.		1,774
Carried over ..			5,352			5,162

Hooghly—Estimate No. 27—*concld.*

Items.	Specification A. Details.	Specification A. Cost.	Specification B. Details.	Specification B. Cost.
		Rs.		Rs.
Brought forward		5,352		5,162
Turfing ..	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	250	5,280′ × 13·5′ = 71,280 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	250
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft.	581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 12,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal .	....	..	....	..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft. At Rs. 30 per 100 c. ft.	9,240	5,280′ × 8′ × 7″ = 24,640 c. ft. At Rs. 30 per 100 c. ft. ..	7,392
Wearing course .	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		27,345		16,159
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	2,735		1,616
	Total ..	30,080		17,775
	Say ..	30,000		18,000

(*b*) *Entirely new road.*

Items.	Specification A. Details.	Specification A. Cost.	Specification B. Details.	Specification B. Cost.
		Rs.		Rs.
Land .	5,280′ × 124′ = 654,720 s. ft. 45·17 bighas at Rs. 100 per bigha	4,517	5,280′ × 124′ = 654,720 s. ft. 45·17 bigha at Rs. 100 per bighas	4,517
Earthwork ..	5,280′ × 209′ = 1,103,520 c. ft. At Rs. 4 per 1,000 c. ft. ..	4,414	5,280′ × 196′ = 1,034,880 c. ft. At Rs. 4 per 1,000 c. ft. ..	4,140
Turfing ..	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	416	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	416
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	....	..	....	..
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c. ft. At Rs. 30 per 100 c. ft. ..	9,240	5,280′ × 8′ × 7″ = 24,640 c. ft. At Rs. 30 per 100 c. ft. ..	7,392
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		31,120		19,850
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,112		1,985
	Total ..	34,232		21,835
	Say ..	34,500		22,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Specification A. Rate.	Specification A. Cost.	Specification B. Quantity.	Specification B. Rate.	Specification B. Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	0·13 mile.	34,500 per mile.	4,485	0·13 mile.	22,000 per mile.	2,860
Improving existing unmetalled road ..	2·25 miles.	30,000 per mile.	67,500	2·25 miles.	18,000 per mile.	40,500
Constructing minor bridges of length up to 30 ft.	20 r. ft.	330 per r. ft.	6,600	20 r. ft.	330 per r. ft.	6,600
Constructing reinforced concrete pipe culverts	51 r. ft.	300 per r. ft.	15,300	51 r. ft.	300 per r.ft.	15,300
Total ..			93,885			65,260
Say ..			1·0 lakh.			0·75 lakh.

ESTIMATE No. 28.

Road No. J—Sub-section 1—Serampur to Manirampur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Rs.	Rs.
1	40	250	3	1·5	..	..	3	20	30	21	31
2	50	250	3	2·0	..	..	3	24	40	21	32
3	60	250	4	2·0	..	..	4	20	36	21	32
4	30	100	2	1·0	..	..	3	18	24	21	31
5	25	400	3	1·0	..	..	4	18	22	21	30
6	35	250	3	1·0	..	..	4	20	28	21	29
6·10	30	300	..	..	1·0	..	3	20	20	21	29
Total 6·10	270	2,100	18	..	..	..	24	140	200	147	214
Average ..	38·5	300	2·55	..	..	..	3·4	20	28·5	21	30·5
Say ..	38	..	..	..	..	..	4	..	28	23	32

Prevailing average rate for—

Item	Unit	Rs. a.	Item	Unit	Rs. a.
Earthwork ..	1,000 c.ft.	4 0	Single brick soling 3″ ..	100 s.ft.	6 0
Turfing	1,000 s.ft.	3 8	Double brick soling 6″ ..	100 s.ft.	11 0
Brick-on-end edging ..	100 r.ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—6′ 0″ arched masonry culvert.	No	No	15	Bridge.
		1—6′ 0″ ditto	,,	,,	8	2—4′ dia. R. C. pipe culvert.
2	3	1—3′ 0″ ditto ..	,,	,,	3	1—3′ ditto.
		1—5′ 9″ iron topped culvert.	,,	,,	15	Bridge.
		3—11′ 0″ bridge ..	,,	,,	50	ditto.
3	4	1—6′ 0″ arched masonry culvert.	,,	,,	15	ditto.
		2—12′ 6″ ditto ..	,,	,,	40	ditto.
4	3	1—1′ 3″ R. C. culvert ..	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—4′ 6″ iron topped culvert.	,,	,,	15	Bridge.
		1—2′ 0″ hume pipe culvert.	,,	,,	3	1—3′ dia. R. C. pipe culvert.
5	4	1—1′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
		1—2′ 6″ ditto. ..	,,	,,	6	2 ditto.
		1—2′ 9″ ditto ..	,,	,,	6	2 ditto.
		1—2′ 0″ ditto ..	,,	,,	3	1 ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
6	4	1—2′ 6″ arched masonry culvert.	,,	,,	4	1—4′ ditto.
		1—1′ 6″ ditto ..	,,	,,	3	1—3′ ditto.
		2—12′ 6″ plank-topped bridge.	,,	,,	30	Bridge.
		New construction ..	..	..	6	2—3′ dia. R. C. pipe culvert.
6·10	3	ditto ..	..	..	6	2 ditto.
Total 6·10		134·25′ or 22 r. ft. per mile			240 or 39·4 r. ft. per mile.	

Allowance of 45 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.
Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 6 \cdot 1 \times 45' - 240' = 34 \cdot 5$ r.ft.

∴ R. C. pipe culverts $= \frac{1}{4} \times 34 \cdot 5 = 8 \cdot 6$, r. ft., say	..	9
Minor bridges up to 30 ft. $= \frac{3}{4} \times 34 \cdot 5' = 25 \cdot 8$, say	..	25
Total	..	274 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	90
Constructing minor bridges of length up to 30 ft.	..	115
Constructing reinforced concrete pipe culverts	..	69
Total		274 r. ft.

Hooghly—Estimate No. 28—*contd.*

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification. B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
1	3	1—6′ 0″ arched masonry culvert.	No	No	15	Bridge.
		1—6′ 0″ ditto ..	„	240	..	
2	3	1—3′ 0″ ditto ..	„	120	..	
		1—5′ 9″ iron topped culvert.	„	No	15	Bridge.
		3—11′ 0″ bridge ..	„	„	50	ditto.
3	4	1—6′ 0″ arched masonry culvert.	„	„	15	ditto.
		2—12′ 6″ ditto ..	„	„	40	ditto.
4	3	1—4′ 3″ R. C. culvert	„	200	..	
		1—4′ 6″ iron topped culvert.	„	No	15	Bridge.
		1—2′ 0″ hume pipe culvert.	„	„	3	1—3′ dia. R. C. pipe culvert.
5	4	1—1′ 0″ arched masonry culvert.	„	„	3	1 ditto.
		2—2′ 6″ ditto ..	„	„	6	2 ditto.
		1—2′ 9″ ditto ..	„	„	6	2 ditto.
		1—2′ 0″ ditto ..	„	„	3	1 ditto.
		1—1′ 6″ pipe culvert ..	„	„	3	1 ditto.
6	4	1—2′ 6″ arched masonry culvert.	„	„	4	1—4′ ditto.
		1—1′ 6″ ditto ..	„	„	3	1—3′ ditto.
		2—12′ 6″ plank-topped bridge.	„	„	30	Bridge.
		New construction ..	..	..	6	2—3′ dia. R. C. pipe culvert.
6·10	3	Ditto ..	..	..	6	2 ditto.
Total 6·10		134·25 or 22 r.ft. per mile		560	223	
				or	14	
					237	or 38·8 r.ft. per mile.

Allowance of 45 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 6·1 × 45 − 237 = 37·5 r.ft.

∴ R. C. pipe culverts = ¼ × 37·5 r.ft. = 9·37, say .. 9

Minor bridges up to 30 ft. = ¾ × 37·5 r.ft. = 28·12, say .. 30

Total .. 276 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	90
Constructing minor bridges of length up to 30 ft.	..	120
Constructing reinforced concrete pipe culverts	..	52
Reconditioning existing bridges and culverts	..	14
Total	..	276 r. ft.

Hooghly—Estimate No. 28—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
		S.ft.			S.ft.	
Land ..	5,280′ × 112′	591,360		5,280′ × 112′	591,360	
	Deduct existing— 5,280′ × 38′	200,640		*Deduct* existing— 5,280′ × 38′	200,640	
		390,720			390,720	
	=27·13 bighas at Rs. 300 per bigha	..	8,139	=27·13 bighas at Rs. 300 per bigha	..	8,139
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′	850,080		5,280′ × 150′	792,000	
	Deduct existing— 5,280′ × 48′/2 × 2·55′	323,136		*Deduct* existing— 5,280′ × 48′/2 × 2·55′	323,136	
		526,944			468,864	
	At Rs. 4 per 1,000 c.ft.	..	2,107	At Rs. 4 per 1,000 c.ft.	..	1,875
		S.ft.			S.ft.	
Turfing ..	5,280′ × 18′	95,040		5,280′ × 18′	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2	10,560		5,280′ × 2	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.			S.ft.	
Soling ..	5,280′ × 2′	10,560		Existing metalled surface is taken as 1st layer of soling.		
	At Rs. 11 per 100 s.ft.	..	1,162			
		S.ft.				
	5,280′ × 8′	42,240				
	At Rs. 6 per 100 s.ft.	..	2,534			
Jhama metal ..	..	..		....	..	
		C.ft.			C.ft.	
Stone metal ..	5,280′ × 10′ × 7″	30,800		5,280′ × 8′ × 7″	24,640	
	At Rs. 32 per 100 c.ft.	..	9,856	At Rs. 32 per 100 c.ft.	..	7,885
		S.ft.				
Wearing course	5,280′ × 10′	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	..	..	
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			30,826			19,053
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,083			1,905
	Total	..	33,909			20,958
	Say	..	34,000			21,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	6·1 miles.	34,000 per mile.	207,400	6·1 miles.	21,000 per mile.	1,28,100
Constructing minor bridges of length above 30 ft.	90 r.ft.	260 per r.ft.	23,400	90 r.ft.	260 per r.ft.	23,400
Constructing minor bridges of length up to 30 ft.	115 r.ft.	330 per r.ft.	37,950	120 r.ft.	330 per r.ft.	39,600
Constructing reinforced concrete pipe culverts.	69 r.ft.	300 per r.ft.	20,700	52 r.ft.	300 per r.ft.	15,600
Reconditioning existing bridges and culverts.	..	..	..	14 r.ft.	40 per r.ft.	560
Total ..	..	..	2,89,450	..	..	2,07,260
Say ..	..	..	**3·0 lakhs**	..	..	**2·25 lakhs.**

ESTIMATE No. 29.

Road No. J—Sub-section 2—Manirampur to Sheakhala.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H. F. L. Above.	Height above or below H. F. L. Below.	Length for which road is below H. F. L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs. a.	Rs. a.
1	28	150	1·0	..	..	..	3	20	26	20 0	35 4
2	22	150	1·0	..	4·0	1·0	7	20	22	22 0	36 8
3	24	150	1·0	..	4·0	1·0	7	20	24	23 0	37 8
4	20	150	1·0	..	..	..	3	15	20	23 12	38 8
5	16	130	1·5	..	0·5	0·75	4	11	16	24 8	39 8
Total 5	110	730	5·5	..	..	..	24	86	108	113 4	187 4
Average	22	146	1·1	..	..	..	5	17·2	21·6	22 10	37 7
Say ..	..	150	..	..	..	..	..	17	21	23 0	38 0

Analysis of rate of stone metal for 100 c. ft.

	Rs. a.
Cost of stone at Pakur	5 8
Railway freight	15 12
Unloading	2 0
Stacking	0 8
Consolidation	6 0
	29 12
Contractor's profit at 10 per cent.	2 15
Say ..	32 12
Carting for 1st mile	2 8
	35 4
Carting for 2nd mile	1 4
	36 8

Rupee 1 is added for extra mileage of carting.

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork ..	1,000 c. ft.	5 0	Single brick soling 3″ ..	100 s. ft.	6 0
Turfing	1,000 s. ft.	3 0	Double brick soling 6″ ..	100 s. ft.	12 0
Brick-on-end edging	100 r. ft.	5 8			

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—5′ 9″ plank-topped culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—2′ 6″ ditto ..	„	„	3	1 ditto.
2	7	1—9′ 3″ ditto ..	„	„	15	Bridge.
		1—3′ 0″ ditto ..	„	„	4	1—4′ dia. R. C. pipe culvert.
Carried over	..	20′ 6″	..	..	28	

Hooghly—Estimate No. 29—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		20′ 6″	..	..	28	
3	7	2—20′ 0″ plank-topped bridge.	No	No	40	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	4	1—4′ dia. R. C. pipe culvert.
		1—3′ 0″ ditto ..	,,	,,	4	1 ditto.
4	3	1—3′ 0″ ditto ..	,,	,,	3	1—3′ ditto.
		1—1′ 6″ plank-topped culvert.	,,	,,	3	1 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	3	1 ditto.
5	4	1—1′ 2″ pipe culvert ..	,,	,,	4	1—4′ ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	4	1 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 6″ pipo culvert ..	,,	,,	4	1 ditto.
		1—4′ 0″ arched mosonry culvert.	,,	,,	4	1 ditto.
Total 5	..	84·67 or 16·93 rft. per mile	..	..	109 or 21·8 r.ft. per mile.	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 5\ (30-21\cdot8) = 41'$.

∴ R. C. pipe culverts $= \frac{1}{4} \times 41' = 10\cdot25$, say	..	12
Minor bridges up to 30 ft. $= \frac{3}{4} \times 41' = 30\cdot75$, say	..	35
Total	..	156 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	40
Constructing minor bridges of length up to 30 ft.	..	50
Constructing reinforced concrete pipe culverts ..	..	66
Total	..	156 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.	
					R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—5′ 9″ plank-topped culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—2′ 6″ ditto ..	,,	,,	3	1 ditto.
2	7	1—9′ 3″ ditto ..	,,	,,	15	Bridge.
		1—3′ 0″ ditto ..	,,	,,	4	1—4′ dia. R. C. pipe culvert.
Carried over	..	20′ 6″	..	..	28	

Hooghly—Estimate No. 29—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification. B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		20′ 6″	..	..	28	
3	7	2—20′ 0″ plank-topped bridge.	No	1,600	..	....
		1—3′ 0″ arched masonry culvert.	,,	No	4	1—4′ dia. R. C. pipe culvert.
		1—3′ 0″ ditto ..	,,	,,	4	1 ditto.
4	3	1—3′ 0″ ditto ..	,,	,,	3	1—3′ ditto.
		1—1′ 6″ plank-topped culvert.	,,	,,	3	1 ditto.
		1—2′ 0″ arched masonry culvert	,,	,,	3	1 ditto.
5	4	1—1′ 2″ pipe culvert ..	,,	,,	4	1—4′ ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 0″ pipe culvert ..	,,	,,	4	1 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	4	1 ditto.
		1—1′ 6″ pipe culvert ..	,,	,,	4	1 ditto.
		1—4′ 0″ arched masonry culvert.	,,	,,	4	1 ditto.
Total 5	..	84·67 or 16·93 r.ft. per mile	..	1,600 or	69 40	
					109	or 21·8 r.ft. per mile.

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. = 5 (30 − 21·8) = 41′.

∴R. C. pipe culverts = ¼ × 41′ = 10·25, say	..	12
Minor bridges up to 30 ft. = ¾ × 41′ = 30·75, say	..	35
Total	..	156 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	50
Constructing reinforced concrete pipe culverts ..	..	66
Reconditioning existing bridges of culverts ..	..	40
Total	..	156 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 124′ =	654,720		5,280′ × 124′ =	654,720	
	Deduct existing— 5,280′ × 22′ =	116,160		*Deduct* existing— 5,280′ × 22′ =	116,160	
		538,560			538,560	
	= 37·4 bighas at Rs. 150 per bigha	..	5,610	= 37·4 bighas at Rs. 150 per bigha	..	5,610
Carried over		..	5,610	..		5,610

Hooghly—Estimate No. 29—*concld.*

Items.	Specification A.			Specification B.		
	Details.		Cost.	Details.		Cost.
			Rs.			Rs.
Brought forward	..		5,610	..		5,610
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 209′ =	1,103,520		5,280′ × 196′ =	1,034,800	
	Deduct existing— 5,280′ × $\frac{38'}{2}$ × 1·1′ =	110,352		*Deduct* existing— 5,280′ × $\frac{38'}{2}$ × 1·1′ =	110,352	
		993,168			921,448	
	At Rs. 5 per 1,000 c. ft. ..		4,966	At Rs. 5 per 1,000 c. ft. ..		4,623
Turfing ..	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3 per 1,000 s. ft. ..		357	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3 per 1,000 s. ft. ..		357
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 12 per 100 s. ft. ..		6,336	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..		2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 23 per 100 c. ft. ..		4,018	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 23 per 100 c. ft. ..		6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 38 per 100 c. ft. ..		5,852	....		..
Wearing course	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..		5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			33,864			20,422
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,386			2,042
	Total ..		37,250			22,464
	Say ..		37,500			22,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A.			Specification B.		
	Quantity.	Rate.	Cost.	Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	5·0 miles.	37,500 per mile.	1,87,500	5·0 miles.	22,500 per mile.	1,12,500
Constructing minor bridges of length above 30 ft.	40 r. ft.	260 per r. ft.	10,400	..	..	..
Constructing minor bridges of length up to 30 ft.	50 ,,	330 per r. ft.	16,500	50 r. ft.	330 per r. ft.	16,500
Constructing reinforced concrete pipe culverts.	66 ,,	300 per r. ft.	19,800	66 ,,	300 per r. ft.	19,800
Reconditioning existing bridges and culverts.	..	..	..	40 ,,	40 per r. ft.	1,600
Total ..	..	..	2,34,200	..	..	1,50,400
Say ..	..	..	**2·5 lakhs.**			**1·5 lakhs.**

ESTIMATE No. 30.

Road No. J.—Sub-section 3—Sheakhala to Sitapur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
	Ft.	Rs.	Ft.	Ft.	Ft.		Ft.	Ft.	Ft.	Rs.	Rs.
					New construction.						
1	..	200	..	..	1·50	..	3	..	..	21	34
2	..	200	..	..	2·00	..	4	..	..	21	35
2·23	..	200	..	..	2·00	..	4	..	..	21	36
Total 2·23	..	600	..	..	..	..	11	..	..	63	105
Average ..	..	200	..	..	..	..	3·67	..	..	21	35
Say ..	..	..	..	..	..	..	4	..	..	23	36
					Unmetalled.						
(0·87) 3	25	200	3·00	1·0	..	..	4	15	24	21	36
4	25	200	2·00	1·0	..	..	3	15	22	21	37
5	29	150	2·00	0·5	..	..	3	18	24	21	38
6	29	150	2·50	1·0	..	..	3	17	23	21	39
Total 3·87	108	700	9·50	..	..	..	13	65	93	84	150
Average ..	27	175	2·40	..	..	..	3·25	16·25	23·25	21	37·5
Say ..	..	..	..	..	..	..	4	16	23	23	39

Analysis of rate of stone metal for 100 c.ft.—

	Rs.	a.
Cost of stone including railway freight from Pakur to Manirampur R.S.	21	4
Carting for 1st mile (6 miles carting from Manirampur R. S.) ..	7	12
Consolidation	5	0
Total ..	34	0

Re. 1 is added for extra mileage of carting.

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3″ ..	100 s.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6″ ..	100 s.ft.	11	0
Brick-on-end edging ..	100 r.ft.	5	8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	New construction ..	..	..	6	2—3′ dia. R.C. pipe culvert.
		do. ..	..	..	6	2 ditto.
		do. ..	..	..	6	2 ditto.
2	4	do. ..	..	..	6	2 ditto.
		do. ..	..	..	6	2 ditto.
		1—30′ 0′ low land ..	..	..	15	Bridge.
3	4	1—50′ 0″ do. ..	..	..	30	Ditto.
		1—1′ 6″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ do. ..	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
4	3	1—1′ 0″ pipe culvert ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
Carried over		10′ 6″			96	

Hooghly—Estimate No. 30—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		10′ 6″	..	..	96	
5	3	1—2′ 0″ arched masonry culvert.	No	No	3	1—3′ dia. R. C. pipe culvert.
		1—4′ 0″ do. ..	,,	,,	6	2 ditto.
		1—10′ 0″ plank topped bridge.	,,	,,	15	Bridge.
		1—5′ 0″ arched masonry culvert.	,,	,,	15	Ditto.
		1—4′ 0″ plank topped culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
6	3	1—1′ 6″ pipe culvert ..	,,	,,	3	1 ditto.
		1—4′ 0″ plank topped culvert.	,,	,,	6	2 ditto.
		1—4′ 0″ do. ..	,,	,,	6	2 ditto.
6·1	3	1—5′ 0″ trough plated culvert.	,,	,,	15	Bridge.
Total 6·1		130 r.ft.			171 or 28 r.ft. per mile.	

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft.—6·1 (30′—28′) = 6·1 × 2 = 12·2 r.ft.

∴ R. C. pipe culverts = 12·2, say 12

Total .. 183 r. ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	90
Constructing reinforced concrete pipe culverts	..	93
Total	..	183 r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

(a) Entirely new road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 112′	= 591,360 = 41·06 bighas.		5,280′ × 112′	= 591,360 = 41·06 bighas.	
	At Rs. 200 per bigha	..	8,212	At Rs. 200 per bigha	..	8,212
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 161′	= 850,080		5,280′ × 150′	= 792,000	
	At Rs. 4 per 1,000 c.ft.	..	3,400	At Rs. 4 per 1,000 c.ft.	..	3,168
		S. ft.			S. ft.	
Turfing ..	5,280′ × 18′	= 95,040		5,280′ × 18′	= 95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R. ft.			R. ft.	
Edging ..	5,280′ × 2	= 10,560		5,280′ × 2	= 10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S. ft.			S. ft.	
Soling ..	5,280′ × 10′	= 52,800		5,280′ × 8′	= 42,240	
	At Rs. 11 per 100 s.ft.	..	5,808	At Rs. 6 per 100 s.ft.	..	2,534
		C. ft.			C. ft.	
Jhama metal	5,280′ × 10′ × 4″	= 17,600		5,280′ × 8′ × 8″	= 28,160	
	At Rs. 23 per 100 c.ft.	..	4,048	At Rs. 23 per 100 c.ft.	..	6,477
Stone metal	5,280′ × 10′ × 3½″	= 15,400				
	At Rs. 36 per 100 c.ft.	..	5,544			
		S.ft.				
Wearing course	5,280′ × 10′	= 52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874			
Posts and pillars	40 nos. at Rs. 6 each		240	40 nos. at Rs. 6 each	..	240
			34,040			21,545
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,404			2,155
	Total	..	37,444			23,700
	Say	..	37,500		..	24,000

Hooghly—Estimate No. 30—*concld.*

(*b*) *Existing unmetalled road.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′	591,360		5,280′ × 112′ =	591,360	
	Deduct existing 5,280′ × 27′ =	142,560		*Deduct* existing 5,280′ × 27′ =	142,560	
		448,800			448,800	
	=31 ·16 bighas at Rs. 175 per bigha ..		5,453	=31 ·16 bighas at Rs. 175 per bigha ..		5,453
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161′ =	850,080		5,280′ × 150′ =	792,000	
	Deduct existing 5,280′ × 39/2 × 2 ·4′ =	247,104		*Deduct* existing 5,280′ × 39′/2 × 2 ·4′ =	247,104	
		602,976			544,896	
	At Rs. 4 per 1,000 c.ft. ..		2,412	At Rs. 4 per 1,000 c.ft. ..		2,180
		S.ft.			S. ft.	
Turfing ..	5,280′ × 18′ =	95,040		5,280′ × 18′ =	95,040	
	At Rs. 3-8 per 1,000 s.ft. ..		333	At Rs. 3-8 per 1,000 s.ft. ..		333
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft. ..		5,808	At Rs. 6 per 100 s.ft. ..		2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 23 per 100 c.ft. ..		4,048	At Rs. 23 per 100 c.ft. ..		6,477
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 39 per 100 c.ft. ..		6,006	....		..
		S.ft.				
Wearing course	5,280′ × 10′ =	52,800		....		..
	At Rs. 11-2 per 100 s.ft.		5,874			
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			30,757			17,798
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,076			1,780
	Total ..		33,833			19,578
	Say ..		34,000			19,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road ..	2 ·23 miles.	37,500 per mile.	83,615	2 ·23 miles.	24,000 per mile.	53,520
Improving existing unmetalled road ..	3 ·87 miles.	34,000 per mile.	131,580	3 ·87 miles.	19,500 per mile.	75,495
Constructing minor bridges of length up to 30 ft.	90 r. ft.	330 per r.ft.	29,700	90 r.ft.	330 per r.ft.	29,700
Constructing reinforced concrete pipe culverts	93 r.ft.	300 per r.ft.	27,900	93 r.ft.	300 per r.ft.	27,900
Total ..	..	..	2,72,795	..	..	1,86,615
Say ..	..	..	**2 ·75 lakhs.**	..	..	**2 ·0 lakhs.**

ESTIMATE No. 31.

Road No. K—Sub-section 1—Uttarpara to Kalipur.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.								
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. — Above.	Height above or below H.F.L. — Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	38	400	3·00	1·50	..	..	3	19	29	20	33
2	40	300	2·50	1·50	..	..	3	21	30	20	32
3	47	250	3·00	..	0·50	0·13	6	21	32	21	31
4	48	200	4·00	2·00	..	..	4	22	31	22	30
5 (4·4)	37	200	2·00	2·00	..	..	3	20	28	23	30
Total	210	1,350	14·50	..	..	..	19	103	150	106	156
Average	42	270	2·90	..	..	..	3·8	20·6	30	21·2	31·2
Say	..	..	3	..	..	..	4	20	..	23	33

Analysis of rate per 100 c.ft. of stone metal—

	Rs.	a.
Stone at Dankuni station ($1\frac{1}{2}''$—$2''$) (including railway freight and cost of metal) ..	21	14
Carting up to 1st mile of road (distance 4 miles) ..	5	12
	27	10
Consolidation	5	0
	32	10
Say ..	33	0

Re. 1 less per extra mileage of carting.

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c.ft.	4	0	Single brick soling 3″ ..	100 s.ft.	6	0
Turfing ..	1,000 s.ft.	3	8	Double brick soling 6″ ..	100 s.ft.	11	0
Brick-on-end edging ..	100 r.ft.	5	8				

Part (2) (a)—Details of existing bridges and proposals for improvement as per specification A.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. — R.ft.	Replacement proposals in r.ft. — Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—2′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		2—3′ 6″ do. ..	”	”	12	4 ditto.
		1—1′ 6″ do. ..	”	”	3	1 ditto.
		1—1′ 0″ do. ..	”	”	3	1 ditto.
		1—1′ 0″ do. ..	”	”	3	1 ditto.
		1—3′ 0″ do. ..	”	”	6	2 ditto.
		1—14′ 6″ iron topped culvert.	”	”	20	Bridge.
		1—3′ 0″ arched masonry culvert.	”	”	6	2—3′ dia. R. C. pipe culvert.
Carried over		33′ 0″			59	

Hooghly—Estimate No. 31—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification A.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		33′ 0″			59	
2	3	1—3′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		2—4′ 0″ do. ..	,,	,,	9	3 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—20′ 0″ iron topped culvert.	,,	,,	30	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
3	6	1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		3—9′ 6″ bridge ..	,,	,,	30	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
4	4	1—8′ 0″ iron topped culvert.	,,	,,	15	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—8′ 0″ iron topped culvert.	,,	,,	15	Bridge.
(4·4) 5	3	Nil	,,	,,	..	
Total 4 excluding the mileage having no bridge or gap.		135·5 r.ft. or 33·87 r.ft. per mile.			218	or 54·5 r.ft. per mile.

Allowance of 60 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30′ = 4·4 × 60′ − 218′ = 264 − 218′ = 46′.

∴ R. C. pipe culverts = ¼ × 46′ = 11·5′, say	..	12
Minor bridges up to 30′ = ¾ × 46′ = 34·5′, say	..	35
Total	..	265 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	145
Constructing reinforced concrete pipe culverts	..	120
Total	..	265 r.ft.

Part (2) (b)—Details of existing bridges and proposals for improvement as per specification B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	1—2′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		2—3′ 6″ do. ..	,,	,,	12	4 ditto.
		1—1′ 6″ do. ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
		1—1′ 0″ do. ..	,,	,,	3	1 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		′—14′ 6″ iron topped culvert.	,,	,,	20	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
Carried over		33′ 0″			59	

Hooghly—Estimate No. 31—*contd.*

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specification B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.			Rs.		
Brought forward		33′ 0″			59	
2	3	1—3′ 0″ arched masonry culvert.	No	No	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		2—4′ 0″ do. ..	,,	,,	9	3 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—20′ 0″ iron topped culvert.	,,	,,	30	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
3	6	1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		3—9′ 6″ bridge	..	1,160	..	
		1—3′ 0″ arched masonry culvert.	No	No	6	2 ditto.
4	4	1—8′ 0″ iron topped culvert.	,,	,,	15	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	6	2—3′ dia. R. C. pipe culvert.
		1—3′ 0″ do. ..	,,	,,	6	2 ditto.
		1—8′ 0″ iron topped culvert.	,,	,,	15	Bridge.
(4·4) 5	3	Nil.				
Total 4 excluding the mileage having no bridge or gap.		135·5 r.ft. or 33·7 r.ft. per mile.		1,160	188	
				or	29	
					217	or 54·25 r.ft. per mile.

Allowance of 60 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30′ = 4·4 × 60′ − 217′ = 264′ − 217′ = 47′.

∴ R. C. pipe culverts = ¼ × 47′ = 11·75, say	..	12
Minor bridges up to 30′ = ¾ × 47′ = 35·25′, say	..	35
Total	..	264 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.	..	115
Constructing reinforced concrete pipe culverts	..	120
Reconditioning existing bridges and culverts	..	29
Total	..	264 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing metalled road.

Items.	Specification A. Details.			Cost.	Specification B. Details.			Cost.
			S.ft.	Rs.			S.ft.	Rs.
Land ..	5,280′ × 112′	=	591,360		5,280′ × 112′	=	591,360	
	Deduct existing 5,280′ × 42′	=	221,760		*Deduct* existing 5,280′ × 42′	=	221,760	
			369,600				369,600	
	= 25·66 bighas at Rs. 270 per bigha			6,928	= 25·66 bighas at Rs. 270 per bigha			6,928
Carried over				6,928				6,928

Hooghly—Estimate No. 31—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought forward			6,928			6,928
		C.ft.			C.ft.	
Earthwork ..	5,280' × 161' =	850,080		5,280' × 150' =	792,000	
	Deduct existing 50'/2 5,280' × — × 3' =	396,000		*Deduct* existing 50'/2 5,280' × — × 3' =	396,000	
		454,080			396,000	
	At Rs. 4 per 1,000 c.ft.	..	1,816	At Rs. 4 per 1,000 c.ft.	..	1,584
		S.ft.			S.ft.	
Turfing ..	5,280' × 18' =	95,040		5,280' × 18' =	95,040	
	At Rs. 3-8 per 1,000 s.ft.	..	333	At Rs. 3-8 per 1,000 s.ft.	..	333
		R.ft.			R.ft.	
Edging ..	5,280' × 2 =	10,560		5,280' × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft.	..	581	At Rs. 5-8 per 100 r.ft.	..	581
		S.ft.				
Soling ..	5,280' × 2' =	10,560				
	At Rs. 11 per 100 s.ft.	..	1,162	..	..	
		C.ft.			C.ft.	
Stone metal ..	5,280' × 10' × 7" =	30,400		5,280' × 8' × 7" =	24,640	
	At Rs. 33 per 100 c.ft.	..	10,164	At Rs. 33 per 100 c.ft.	..	8,131
		S.ft.				
Wearing course	5,280' × 10' =	52,800				
	At Rs. 11-2 per 100 s.ft.	..	5,874	....		..
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			27,098			17,797
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		2,710			1,780
		Total ..	29,808			19,577
		Say ..	30,000			19,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing metalled road ..	4·4 miles.	30,000 per mile.	1,32,000	4·4 miles.	19,500 per mile.	85,800
Constructing minor bridges of length up to 30 ft.	145 r.ft.	330 per r.ft.	47,850	115 r.ft.	330 per r.ft.	37,950
Constructing reinforced concrete pipe culverts.	120 r.ft.	300 per r.ft.	36,000	120 r.ft.	300 per r.ft.	36,000
Reconditioning existing bridges and culverts.	..	..	..	29 r.ft.	40 per r.ft.	1,160
Total ..			2,15,850			1,60,910
Say ..			**2·25 lakhs.**			**1·75 lakhs.**

ESTIMATE No. 32.

Road No. L. Sub-section 1—Jairampur to Khanakul.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H.F.L.: Above.	Height above or below H.F.L.: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
		Rs.			Feet.	Mile.	Feet.			Rs.	Rs.
1	..	150	..	..	5·00	1	7	..	..	21	45
2	..	150	..	..	4·00	1	6	..	.	21	46
3	..	150	..	..	2·00	1	4	..	..	21	47
4	..	150	..	..	2·00	1	4	..	..	21	48
5	..	150	..	..	1·50	1	3	..	..	21	49
6	..	150	..	..	1·50	1	3	..	..	21	50
7	..	150	..	..	1·50	1	3	..	..	21	51
8	..	150	..	..	2·50	1	5	..	..	21	52
9	..	150	..	..	4·00	1	6	..	..	21	53
10	..	100	..	..	7·00	1	10	..	..	21	54
11	..	250	..	..	4·00	1	6	..	..	21	55
(12) 11·31	..	150	..	..	4·00	0·31	6	..	..	21	56
Total 11·31	..	1,850	..	..	..	..	63	..	..	252	606
Average	.. ..	154·17	..	..	..	..	5·25	..	..	21	50·5
Say	.. ..	155	..	..	..	..	6	..	..	23	52

Prevailing average rate for—

		Rs. a.			Rs. a.
Earthwork ..	1,000 c. ft.	4 0	Single brick soling 3" ..	100 s. ft.	6 0
Turfing	1,000 s. ft.	3 8	Double brick soling 6" ..	100 s. ft.	11 0
Brick-on-end edging ..	100 r. ft.	5 8			

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft.: R. ft.	Replacement proposals in r. ft.: Type.
1	2	3	4	5	6	7
	Ft.					
1	7	New construction for a gap	..	..	20	Bridge.
		New construction ..	..	..	45	(3 × 15′) ditto.
		Ditto ..	..	..	16	4—4′ dia. R. C. pipe culverts.
2	6	1—120′ causeway ..	..	..	30	Bridge.
		New construction ..	..	..	20	Ditto.
		Ditto ..	..	..	16	4—4′ dia. R. C. pipe culverts.
Carried over					147	

Hooghly—Estimate No. 32—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. — R. ft.	Replacement proposals in r. ft. — Type.
1	2	3	4	5	6	7
Brought forward					147	
	Ft.					
3	4	New construction	..	..	24	8—3′ dia. R. pipe culverts.
4	4	Ditto	..	..	24	8 ditto.
5	3	Ditto	..	..	24	8 ditto.
6	3	Ditto	..	..	24	8 ditto.
7	3	Ditto	..	..	24	8 ditto.
8	5	Ditto	..	..	16	4—4′ ditto.
9	6	Ditto	..	..	20	Bridge.
10	10	Ditto (marshy land)	..	..	30	Ditto.
		1—300′ khal (unbridged)	..	..	120	Ditto (excluded from total).
		Marshy land	..	..	40	(2 × 20′) ditto.
11	6	New construction	..	..	32	8—4′ dia. R. C. pipe culverts.
11·31	6	Ditto	..	..	12	3 ditto.
Total 11·31 miles.					417	or 37 r. ft. per mile.
		Bridges of over 100 ft. in length ..			120	

Allowance of 40 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

For 10·3 miles, an allowance of 500 r. ft. per mile is required for a length of 1 mile (spill).

Extra provision for R. C. pipe culverts and minor bridges of length up to 30′ = 10·3 (40′ − 37′) + 500′ = 10·3 × 3′ + 500′ = 30·9′ + 500′ = 530·9′.

∴ R. C. pipe culverts = ¼ × 530·9′ = 132·7′, say	.. ..	132
Minor bridges up to 30′ = ¾ × 530·9′ = 398·1, say	.. ..	400
Total	..	1,069 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300′	..	120
Constructing minor bridges of length up to 30 ft.	..	605
Constructing reinforced concrete pipe culverts	..	344
Total	..	1,069 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Entirely new road.

Items.	Specification A. Details.	Specification A. Cost.	Specification B. Details.	Specification B. Cost.
		Rs.		Rs.
Land ..	5,280′ × 135′ = 712,800 s. ft. = 49·5 bighas. At Rs. 155 per bigha ..	7,673	5,280′ × 135′ = 712,800 s. ft. = 49·5 bighas. At Rs. 155 per bigha ..	7,673
Earthwork ..	5,280′ × 262 = 1,383,360 c. ft. At Rs. 4 per 1,000 c. ft.	5,533	5,280′ × 247 = 1,304,160 c. ft. At Rs. 4 per 1,000 c. ft.	5,216
Carried over		13,206		12,889

Hooghly—Estimate No. 32—*concld.*

Items.	Specification A. Details.	Specification A. Cost.	Specification B. Details	Specification B. Cost.
		Rs.		Rs.
Brought forward		13,206		12,889
Turfing ..	5,280′ × 27′ = 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	499	5,280′ × 27′ - 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	499
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 23 per 100 c. ft. ..	4,048	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 23 per 100 c. ft. ..	6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 52 per 100 c. ft. ..	8,008	....	..
Wearing course ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		38,264		23,220
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,826		2,322
	Total ..	42,090		25,542
	Say ..	42,000		25,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Specification A. Rate.	Specification A. Cost.	Specification B. Quantity.	Specification B. Rate.	Specification B. Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road	11·31 miles.	42,000 per mile.	4,75,020	11·31 miles.	25,500 per mile.	2,88,405
Constructing major bridges of length from 110 ft. to 300 ft.	120 r. ft.	320 per r. ft.	38,400	120 r. ft.	320 per r. ft.	38,400
Constructing approaches to above ..	2 sets.	2,500 per set.	5,000	2 sets.	2,500 per set.	5,000
Constructing minor bridges of length up to 30 ft.	605 r. ft.	330 per r. ft.	1,99,650	605 r. ft.	330 per r. ft.	1,99,650
Constructing reinforced concrete pipe culverts	344 r. ft.	300 per r. ft.	1,03,200	344 r. ft.	300 per r. ft.	1,03,200
Total ..			8,21,270			6,34,655
Say ..			8·25 lakhs.			6·5 lakhs.

ESTIMATE No. 33.

Road No. L Sub-section 2 Khanakul to Rajhati.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	18	250	1·00	..	2	1	5	11	18	21	57
2	21	150	1·75	..	3	1	7	12	21	21	58
3	18	250	0·50	..	3	1	6	12	18	21	59
Total 3 ..	57	650	3·25	..	..	..	18	35	57	63	174
Average ..	19	216·7	1·08	..	..	..	6	11·67	19	21	58
Say ..	..	220	1	..	..	..	..	11	..	23	60

Prevailing average rate for—

		Rs.	a.			Rs.	a.
Earthwork ..	1,000 c. ft.	4	0	Single brick soling 3″ ..	100 s. ft.	6	0
Turfing	1,000 s. ft.	3	8	Double brick soling 6″ ..	100 s. ft.	11	0
Brick-on-end edging ..	100 r. ft.	5	8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	5	5—1′ 6″ C. I. pipe culverts	No	No	20	5—4′ dia. R. C. pipe culverts.
		1—19′ 6″ T. P. bridge ..	,,	,,	25	Bridge.
2	7	5—1′ 6″ C. I. pipe culverts	,,	,,	20	5—4′ dia. R. C. pipe culverts.
3	6	1—12′ 0″ foot bridge ..	,,	,,	20	Bridge.
		1—10′ 0″ do. ..	,,	,,	20	Ditto.
		1—3′ 6″ arched masonry culvert.	,,	,,	4	1—4′ dia. R. C. pipe culvert.
		1—4′ 0″ do.	,,	,,	8	2 ditto.
		1—1′ 6″ C. I. pipe culverts	,,	,,	3	1—3′ ditto.
Total 3 miles		65·5 r. ft. or 21·80 r. ft. per mile			120	or 40 r. ft. per mile.

Allowance of 60 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30′ = 3 (60′ − 40′) = 3 × 20′ = 60.′

∴ R. C. pipe culverts = ¼ × 60′	..	15
Minor bridges up to 30′ = ¾ × 60′	..	45
Total	..	180 r.ft.

Abstract of the above.

Constructing minor bridges of length up to 30 ft.		110
Constructing reinforced concrete pipe culverts	..	70
Total	..	180 r.ft.

Hooghly—Estimate No. 33—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
	S. ft.	Rs.	S. ft.	Rs.
Land ..	5,280′×135′ =712,800 *Deduct* existing 5,280′×19′ =100,320 612,480 =42·53 bighas at Rs. 220 per bigha ..	9,357	5,280′×135′ =712,800 *Deduct* existing 5,280′×19′ =100,320 612,480 =42·53 bighas at Rs. 220 per bigha ..	9,357
	C. ft.		C. ft.	
Earthwork ..	5,280′×262 = 1,383,360 *Deduct* existing — $5,280' \times \frac{30'}{2} \times 1'$ = 79,200 1,304,160 At Rs. 4 per 1,000 c. ft. ..	5,217	5,280′×247 = 1,304,160 *Deduct* existing— $5,280' \times \frac{30'}{2} \times 1'$ = 79,200 1,224,960 At Rs. 4 per 1,000 c. ft. ..	4,900
Turfing ..	5,280′×27′ = 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	499	5,280′×27′ = 142,560 s. ft. At Rs. 3-8 per 1,000 s. ft. ..	499
Edging ..	5,280′×2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581	5,280′×2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..	581
Soling ..	5,280′×10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..	5,808	5,280′×8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..	2,534
Jhama metal ..	5,280′×10′×4″= 17,600 c. ft. At Rs. 23 per 100 c. ft. ..	4,048	5,280′×8′×8″= 28,160 c. ft. At Rs. 23 per 100 c. ft. ..	6,477
Stone metal ..	5,280′×10′×3½″= 15,400 c. ft. At Rs. 60 per 100 c. ft. ..	9,240	....	..
Wearing course ..	5,280′×10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each ..	240
		40,864		24,568
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	4,086		2,457
	Total ..	44,950		27,025
	Say ..	45,000		27,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	3 miles	45,000 per mile.	1,35,000	3 miles	27,000 per mile.	81,000
Constructing minor bridges of length up to 30 ft.	110 r. ft.	330 per r. ft.	36,300	110 r. ft.	330 per r. ft.	36,300
Constructing reinforced concrete pipe culverts	70 r. ft.	300 per r. ft.	21,000	70 r. ft.	300 per r. ft.	21,000
Total ..			1,92,300			1,38,300
Say ..			2 lakhs.			1·5 lakhs.

ESTIMATE No. 34.

Road No. L—Sub-section 3—Rajhati to Palaspai.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land: Existing width.	Land: Cost per bigha.	Embankment: Existing height.	Height above or below H.F.L.: Above.	Height above or below H.F.L.: Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
		Rs.			Ft.	Mile.	Ft.			Rs.	Rs.
1	..	100	..	..	6	1	8	..	..	21	59
2	..	100	..	..	7	1	10	..	..	21	60
3	..	100	..	..	5	1	7	..	..	21	61
4	..	150	..	..	5	1	7	..	..	21	62
5	..	100	..	..	4	1	6	..	..	21	63
Total 5	..	550	..	..	..	..	38	..	..	63	305
Average	..	110	..	..	..	..	7·6	..	..	21	61
Say	..	..	..	..		..	8	..	..	23	62

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of unproved road.	Existing bridges or unbridged gaps.		Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft.: R.ft.	Replacement proposals in r.ft.: Type.
1	2	3		4	5	6	7
	Ft.						
1	8		Low land ..	..	..	60	Bridge.
2	10		Ditto ..	..	..	90	Ditto.
3	7	1—60′ 0″	khal unbridged	..	..	50	Ditto.
		1—27′ 0″	nullah ditto	..	..	15	Ditto.
		1—350′ 0″	Mundeswari river (unbridged).	..	..	400	Ditto (excluded from total).
		1—46′ 0″	khal unbridged	..	..	30	Ditto.
		1—28′ 0″	gap ..	..	..	20	Ditto.
4	7	1—100′ 0″	irrigation canal (unbridged).	..	..	120	Ditto (excluded from total).
		1—20′ 0″	gap ..	..	..	15	Ditto.
			Low land ..	..	..	20	Ditto.
5	6	1—110′ 0″	Muchigata khal (unbridged).	..	..	120	Ditto (excluded from total).
		1—10′ 0″	gap ..	..	..	15	Ditto.
		1—10′ 0″	nullah (unbridged).	..	..	15	Ditto.
			Low land ..	..	..	20.	Ditto.
Total 5	..	201 r.ft. or 40·2 r.ft. per mile.		..	..	350	or 70 r.ft. per mile.
		Bridges of over 100 ft. in length			..	640	

Allowance of 90 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges up to 30 ft. $= 5(90' - 70') = 100$ ft.

∴ R. C. pipe culverts—$\frac{1}{4} \times 100' = 25'$, say	..	24
Minor bridges up to 30 ft.—$\frac{3}{4} \times 100' = 75'$	..	75
Total	..	1,089 r.ft.

Abstract of the above.

Constructing major bridges of length above 300 ft.	..	400
Constructing major bridges of length up to 300 ft.	..	240
Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	375
Constructing reinforced concrete pipe culverts	..	24
Total	..	1,089 r.ft.

Hooghly—Estimate No. 34—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Entirely new road.

Items.	Specification A. Details.	Specification A. Cost.	Specification B. Details.	Specification B. Cost.
		Rs.		Rs.
Land ..	5,280′ × 156′ = 823,680 s.ft. = 57·2 bighas. At Rs. 110 per bigha	6,292	5,280′ × 156′ = 823,680 s.ft. 57·2 bighas. At Rs. 110 per bigha	6,292
Earthwork ..	5,280′ × 381′ = 2,011,680 c.ft. At Rs. 4 per 1,000 c.ft.	8,047	5,280′ × 361′ = 1,906,080 c.ft. At Rs. 4 per 1,000 c.ft.	7,624
Turfing ..	5,280′ × 36′ = 190,080 s.ft. At Rs. 3-8 per 1,000 s.ft.	665	5,280′ × 36′ = 190,080 s.ft. At Rs. 3-8 per 1,000 s.ft.	665
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	581
Soling ..	5,280′ × 10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft.	5,808	5,280′ × 8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft.	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 23 per 100 c.ft.	4,048	5,280′ × 8′ × 8″ = 28,160 c.ft. At Rs. 23 per 100 c.ft.	6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 62 per 100 cft.	9,548	....	..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each	240	40 nos. at Rs. 6 each	240
		41,103		24,413
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	4,110		2,441
	Total ..	45,213		26,854
	Say ..	45,500		27,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Specification A. Rate.	Specification A. Cost.	Specification B. Quantity.	Specification B. Rate.	Specification B. Cost.
			Rs.			Rs.
Constructing new road ..	5·0 miles.	45,500 per mile.	2,27,500	5·0 miles.	27,000 per mile.	1,35,000
Constructing major bridges of length above 300 ft.—(1) Mundeswari river.	400 r.ft.	490 per r.ft.	1,96,000	400 r.ft.	490 per r.ft.	1,96,000
Constructing major bridges of length from 110 ft. to 300 ft.	240 r.ft.	340 per r.ft.	81,600	240 r.ft.	340 per r.ft.	81,600
Constructing approaches to above ..	2 sets.	5,500 each.	11,000	2 sets.	5,500 each.	11,000
	4 sets.	2,500 each.	10,000	4 sets.	2,500 each.	10,000
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	375 r.ft.	330 per r.ft.	1,23,750	375 r.ft.	330 per r.ft.	1,23,750
Constructing reinforced concrete pipe culverts.	24 r.ft.	300 per. r.ft.	7,200	24 r.ft.	300 per r.ft.	7,200
Total ..			**6,70,050**			**5,77,550**
Say ..			**6·75 lakhs.**			**6·0 lakhs.**

ESTIMATE No. 35.

Road No. M—Sub-section 1—Rajhati to Kagnan.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
		Rs.			Ft.	Mile.	Ft.			Rs.	Rs.
1	..	200	..	..	8·00	1	11	..	..	21	59
2	..	100	..	..	9·00	1	12	..	..	21	60
3	..	100	..	..	7·50	1	11	..	..	21	61
4	..	100	..	..	7·00	1	10	..	..	21	62
(4·13) 5	..	100	..	..	5·00	0·13	7	..	..	21	63
Total 4·13	..	600	..	..	..	..	51	..	..	105	305
Average	..	120	..	..	..	..	10·2	..	..	21	61
Say	..	..	..	..	..	..	11	..	..	23	62

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	1 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R. ft.	Replacement proposals in r.ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	11	2—35′ nullah (unbridged) ..	..	..	60	2—30′ bridges.
		1—75′ do. ..	..	..	60	Bridge.
		1—20′ do. ..	..	..	15	Ditto.
		Low land ..	..	..	30	2—15′ bridges.
2	12	1—36′ khal (unbridged) ..	..	..	30	Bridge.
		1—25′ do. ..	..	..	20	Ditto.
		1—23′ do. ..	..	..	20	Ditto.
		1—150′ low land ..	..	..	50	Ditto.
		Low land ..	..	..	45	3—15′ bridges.
3	11	1—50′ nullah (unbridged) ..	..	..	40	Bridge.
		1—130′ low land ..	..	..	60	Ditto.
		1—85′ do. ..	..	..	50	Ditto.
		1—60′ do. ..	..	..	30	Ditto.
4	10	1—75′ Arora khal (unbridged)	..	..	80	Ditto.
		1—35′ nullah (do.) ..	..	..	30	Ditto.
		1—15′ do. ..	..	..	15	Ditto.
5 (4·13)	7	1—15′ do. ..	..	..	15	Ditto.
Total 4·13 miles		864′ or 209 r.ft. per mile.	..	..	650	or 157 r.ft. per mile.

Allowance of 175 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 4·13 (175′ − 157′) = 4·13 × 18′ = 74·34′

∴ R. C. pipe culverts = ¼ × 74·34′ = 18·58, say	..	..	18
Minor bridges up to 30′ = ¾ × 74·34′ = 55·74, say	..	..	55
	Total	..	723 r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	340
Constructing minor bridges of length up to 30 ft.	..	365
Constructing reinforced concrete pipe culverts	..	18
Total	..	723 r. ft.

Hooghly—Estimate No. 35—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Entirely new road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 187′ =	987,360 = 68·58 bighas.		5,280′ × 187′ =	987,360 = 68·58 bighas.	
	At Rs. 120 per bigha ..		8,230	At Rs. 120 per bigha ..		8,230
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 592 =	3,125,760		5,280′ × 566′ =	2,988,480	
	At Rs. 4 per 1,000 c.ft. ..		12,503	At Rs. 4 per 1,000 c.ft. ..		11,954
		S.ft.			S.ft.	
Turfing ..	5,280′ × 49·5′ =	261,360		5,280′ × 49·5′ =	261,360	
	At Rs. 3-8 per 1,000 s.ft. ..		915	At Rs. 3-8 per 1,000 s.ft. ..		915
		R.ft.			R.ft.	
Edging ..	5,280′ × 2 =	10,560		5,280′ × 2 =	10,560	
	At Rs. 5-8 per 100 r.ft. ..		581	At Rs. 5-8 per 100 r.ft. ..		581
		S.ft.			S.ft.	
Soling ..	5,280′ × 10′ =	52,800		5,280′ × 8′ =	42,240	
	At Rs. 11 per 100 s.ft. ..		5,808	At Rs. 6 per 100 s.ft. ..		2,534
		C.ft.			C.ft.	
Jhama metal ..	5,280′ × 10′ × 4″ =	17,600		5,280′ × 8′ × 8″ =	28,160	
	At Rs. 23 per 100 c.ft. ..		4,048	At Rs. 23 per 100 c.ft. ..		6,477
		C.ft.				
Stone metal ..	5,280′ × 10′ × 3½″ =	15,400				
	At Rs. 62 per 100 c.ft. ..		9,548	....	..	
		S. ft.				
Wearing course	5,280′ × 10′ =	52,800				
	At Rs. 11-2 per 100 s.ft. ..		5,874			
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			47,747			30,931
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		4,775			3,093
	Total ..		52,522			34,024
	Say ..		52,500			34,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Constructing new road ..	4·13 miles.	52,500 per mile.	2,16,825	4·13 miles.	34,000 per mile.	1,40,420
Constructing minor bridges of length above 30 ft. ..	340 r.ft.	260 per r.ft.	88,400	340 r.ft.	260 per r.ft.	88,400
Constructing minor bridges of length up to 30 ft.	365 r.ft.	330 per r.ft.	1,20,450	365 r.ft.	330 per r.ft.	1,20,450
Constructing reinforced concrete pipe culverts	18 r.ft.	300 per r.ft.	5,400	18 r.ft.	300 per r.ft.	5,400
Total ..			4,31,075			3,54,670
Say ..			**4·5 lakhs.**			**3·75 lakhs.**

ESTIMATE No. 36.

Road No. N—Sub-section 1—Arambagh to Pandugram.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land.		Embankment.							Rate for jhama metal.	Rate for stone metal.
	Existing width.	Cost per bigha.	Existing height.	Height above or below H.F.L.		Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.		
				Above.	Below.						
	Ft.	Rs.	Ft.	Ft.	Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
(0·76) 1	32	1,200	1·50	..	1·00	0·76	5	23	28	21	49
2	46	200	3·00	..	1·00	1·00	6	17	28	21	50
3	49	100	2·20	..	1·00	0·50	5	21	28	21	51
4	72	50	1·00	..	1·00	1·00	4	29	35	21	52
5	66	50	1·00	1·00	..	..	3	27	33	21	53
6	88	100	1·00	0·0	..	..	3	32	35	21	54
7	88	100	3·50	1·00	..	..	4	23	40	21	55
8	71	100	1·00	..	1·50	1·0	4	30	35	21	56
9	64	200	1·00	1·00	..	..	3	31	33	21	57
9·8	66	200	0·50	..	5·00	0·80	8	30	32	21	58
Total 9·56	642	2,300	15·70	..	..	..	45	263	327	210	535
Average	64·20	230	1·57	..	..	..	4·50	26·30	32·70	21	53·50
Say ..	64	250	1·5	..	..	..	5	26	33	23	53

Prevailing average rate for

		Rs. a.			Rs. a.
Earthwork ..	1,000 c. ft.	4 0	Single brick soling 3″ ..	100 s. ft.	6 0
Turfing	1,000 s. ft.	3 8	Double brick soling 6″ ..	100 s. ft.	11 0
Brick-on-end edging	100 r. ft.	5 8			

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft.	
					R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1 (0·76)	5	1—2′ 0″ arched masonry culvert.	No	No	8	2—4′ dia. R. C. pipe culverts.
		1—2′ 0″ plank topped culvert.	,,	,,	8	2 ditto.
2	6	1—6′ 0″ do. ..	,,	,,	15	Bridge.
		1—3′ 0″ arched masonry culvert.	,,	,,	8	2—4′ dia. R. C. pipe culverts.
		1—3′ 0″ do. ..	,,	,,	8	2 ditto.
		1—4′ 0″ plank topped culvert.	,,	,,	8	2 ditto.
		1—3′ 0 do. ..	,,	,,	8	2 ditto.
		1—3′ 0″ do. ..	,,	,,	8	2 ditto.
		1—2′ 0″ arched masonry culvert.	,,	,,	8	2 ditto.
Carried over		28′ 0″			79	

Hooghly—Estimate No. 36—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward		28′ 0″			79	
3	5	1—2′ 0″ plank topped culvert.	No	No	6	2—3′ dia. R. C. pipe culverts.
		1—2′ 0″ R. C. culvert ..	"	"	6	2 ditto.
		1—2′ 0″ hume pipe culvert	"	"	6	2 ditto.
		1—4′ 0″ R. C. culvert ..	"	"	6	2 ditto.
4	4	New construction ..	..	..	6	2 ditto.
5	3	do. ..	..	..	3	1 ditto.
		1—4′ 0″ arched masonry culvert.	No	No	6	2 ditto.
		1—3′ 0″ do. ..	"	"	6	2 ditto.
6	3	New construction ..	..	..	3	1 ditto.
		1—1′ 0″ arched masonry culvert.	No	No	3	1 ditto.
		1—1′ 0″ do. ..	"	"	3	1 ditto.
		1—1′ 0″ do. ..	"	"	3	1 ditto.
7	4	1—5′ 0″ do. ..	"	"	15	Bridge.
		2—5′ 0″ do. ..	"	"	15	ditto.
		1—20′ 0″ plank topped culvert.	"	"	30	ditto.
8	4	1—1′ 0″ arched masonry culvert	"	"	4	1—4′ 0″ dia. R. C. pipe culvert.
		New construction ..	..	..	4	1 ditto.
		1—1′ 0″ arched masonry culvert.	No	No	4	1 ditto.
		New construction ..	..	..	4	1 ditto.
9	3	do. ..	..	..	9	3—3′ ditto.
(0·8) 10	8	1—1′ 6″ pipe culvert ..	No	No	8	2—4′ ditto.
		1—30′ 0″ low land ..	..	..	15	Bridge.
		1—300′ Amudar river (unbridged).	..	..	150	Ditto (excluded from total).
		New construction ..	..	..	6	2—3′ dia. R. C. pipe culvert.
Total 9·56 miles.		116·5′ or 12·2 r. ft. per mile	..	..	250	or 26·2 r. ft. per mile.
		Bridges of over 100 ft. in length	..	..	150	

Allowance of 30 r. ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $= 9\cdot56 \times 30' - 250' = 286\cdot8' - 250' = 36\cdot8$ r. ft.

∴ R. C. pipe culverts $= \frac{1}{4} \times 36\cdot8' = 9\cdot2'$, say 9

Minor bridges up to 30 ft. $= \frac{3}{4} \times 36\cdot8' = 27\cdot6$, say 30

Total .. 439 r. ft.

Abstract of the above.

Constructing major bridges of length up to 300 ft.	..	150
Constructing minor bridges of length up to 30 ft. ..	..	120
Constructing reinforced concrete pipe culverts ..	..	169
Total		439 r. ft.

Hooghly—Estimate No. 36—*concld.*

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S. ft.	Rs.		S. ft.	Rs.
Land ..	5,280′ × 124′ =	654,720		5,280′ × 124′ =	654,720	
	Deduct existing 5,280′ × 64′ =	337,920		*Deduct* existing 5,280′ × 64′ =	337,920	
		316,800			316,800	
	22 bighas at Rs. 250 per bigha		5,500	= 22 bighas at Rs. 250 per bigha		5,500
		C. ft.			C. ft.	
Earthwork ..	5,280′ × 209 =	1,103,520		5,280′ × 196 =	1,034,880	
	Deduct existing 5,280′ × 59′/2 × 1·5′ =	233,640		*Deduct* existing 5,280′ × 59′/2 × 1·5′ =	233,640	
		869,880			801,240	
	At Rs. 4 per 1,000 c. ft. ..		3,480	At Rs. 4 per 1,000 c. ft. ..		3,205
Turfing ..	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..		416	5,280′ × 22·5′ = 118,800 s. ft. At Rs. 3-8 per 1,000 s. ft. ..		416
Edging ..	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581	5,280′ × 2 = 10,560 r. ft. At Rs. 5-8 per 100 r. ft. ..		581
Soling ..	5,280′ × 10′ = 52,800 s. ft. At Rs. 11 per 100 s. ft. ..		5,808	5,280′ × 8′ = 42,240 s. ft. At Rs. 6 per 100 s. ft. ..		2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c. ft. At Rs. 23 per 100 c. ft. ..		4,048	5,280′ × 8′ × 8″ = 28,160 c. ft. At Rs. 23 per 100 c. ft. ..		6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c. ft. At Rs. 53 per 100 c. ft. ..		8,162	....		—
Wearing course	5,280′ × 10′ = 52,800 s. ft. At Rs. 11-2 per 100 s. ft. ..		5,874	....		—
Posts and pillars	40 nos. at Rs. 6 each ..		240	40 nos. at Rs. 6 each ..		240
			34,109			18,953
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,411	....		1,895
	Total ..		37,520			20,848
	Say ..		37,500			21,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	9·56 miles.	37,500 per mile.	3,58,500	9·56 miles.	21,000 per mile.	2,00,760
Constructing major bridges of length from 110 ft. to 300 ft.	150 r. ft.	320 per r. ft.	48,000	150 r. ft.	320 per r. ft.	48,000
Constructing approaches to above ..	2 sets	2,500 per set.	5,000	2 sets	2,500 per set.	5,000
Constructing minor bridges of length up to 30 ft.	120 r. ft.	330 per r. ft.	39,600	120 r. ft.	330 per r. ft.	39,600
Constructing reinforced concrete pipe culverts.	169 r. ft.	300 per r. ft.	50,700	169 r. ft.	300 per r. ft.	50,700
Total ..			5,01,800			3,45,060
Say ..			5·00 lakhs.			3·5 lakhs.

ESTIMATE No. 37.

Road No. N—Sub-section 2—Pandugram to Badanganj.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Height above or below H.F.L. Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.		Ft.	Mile.	Ft.	Ft.	Ft.	Rs.	Rs.
1	39	100	1	..	1·00	1	4	16	20	21	59
2	23	100	1	..	1·00	1	4	11	13	21	60
3	34	100	1	..	2·00	1	5	15	19	21	61
4	39	100	1	..	2·00	1	5	19	21	21	62
5	24	100	1	..	1·50	1	5	14	17	21	63
6	18	400	1	..	1·00	1	4	12	14	21	64
7	32	300	1	..	1·00	1	4	14	18	21	65
Total 7	209	1,200	7	..	..	..	31	101	122	147	434
Average	29·86	171·4	1	..	..	..	4·4	14·4	17·4	21	62
Say.	30	175	..	..	..	..	5	14	17	23	63

Prevailing average rate for—

			Rs. a.				Rs. a.
Earthwork	..	1,000 c.ft.	4 0	Single brick soling 3″	..	100 s.ft.	6 0
Turfing	..	1,000 s.ft.	3 8	Double brick soling 6″	..	100 s.ft.	11 0
Brick-on-end edging	..	100 r.ft.	5 8				

Parts 2 (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Replacement proposals in r. ft. Type.
1	2	3	4	5	6	7
	Ft.					
1	4	1—3′ 0″ plank topped culvert.	No	No	6	2—3′ diameter R. C. pipe culverts.
		1—1′ 6″ pipe culvert	„	„	6	2 ditto.
		1—1′ 0″ do. ..	„	„	3	1 ditto.
		1—1′ 0″ do. ..	„	„	3	1 ditto.
		1—1′ 0″ do. ..	„	„	3	1 ditto.
2	4	1—1′ 0″ do. ..	„	„	3	1 ditto.
		1—1′ 0″ do. ..	„	„	3	1 ditto.
		New construction ..	..	..	6	2 ditto.
3	5	Ditto ..	..	..	8	2—4′ ditto.
		1—2′ 0″ stone slab culvert	No	No	8	2 ditto.
4	5	1—1′ 6″ pipe culvert ..	„	„	8	2 ditto.
		1—1′ 0″ do. ..	„	„	4	1 ditto.
		1—100′ 0″ khal (unbridged).	..	..	100	Bridge.
		1—1′ 0″ culvert ..	No	No	8	2—4′ diameter R. C. pipe culverts.
		1—1′ 6″ do. ..	„	„	4	1 ditto
Carried over ..		116′ 6″			173	

Hooghly—Estimate No. 37—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r. ft. R. ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward ..		116′ 6″			173	
5	5	1—2′ 0″ stone slab culvert	No	No	8	2—4′ diameter R. C. pipe culvert.
		1—1′ 6″ arched masonry culvert.	„	„	4	1 ditto.
		New construction ..	..	..	4	1 ditto.
		1—3′ 0″ arched masonry culvert.	No	No	8	2 ditto.
		1—3′ 0″ do. ..	„	„	8	2 ditto.
		1—3′ 0″ do. ..	„	„	8	2 ditto.
		1—3′ 0″ do. ..	„	„	8	2 ditto.
6	4	1—3′ 0″ do. ..	„	„	6	2—3′ ditto.
		1—1′ 0″ do. ..	„	„	3	1 ditto.
		1—1′ 6″ pipe culvert ..	..	„	3	1—3′ ditto.
		1—3′ 0″ arched masonry culvert.	„	„	6	2 ditto.
		1—2′ 6″ do. ..	„	„	6	2 ditto.
7	4	1—4′ 0″ plank topped culvert.	„	„	} 15	Bridge.
		1—3′ 0″ arched masonry culvert.	„	„		
		1—1′ 0″ pipe culvert	„	„	3	1—3′ diameter R. C. pipe culvert.
		1—2′ 0″ arched masonry culvert.	„	„	6	2 ditto.
		1—2′ 0″ plank topped culvert.	„	„	3	1 ditto.
		1—3′ 0″ do. ..	„	„	6	2 ditto.
Total 7 miles		158′ or 22·57 r.ft. per mile			278	or 39·70 r.ft. per mile.

Allowance of 40 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. $-7 \times 40' - 278' = 280' - 278' = 2'$.

∴ R. C. pipe culvert—2′, say ..	3	
Total ..	281	r. ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft. ..	100	
Constructing minor bridges of length up to 30 ft. ..	15	
Constructing reinforced concrete pipe culverts ..	166	
Total ..	281	r. ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.			Cost.	Specification B. Details.			Cost.
			S.ft.	Rs.			S.ft.	Rs.
Land ..	5,280′ × 124′	=	654,720		5,280′ × 124′	=	654,720	
	Deduct existing 5,280′ × 30′	=	158,400		*Deduct* existing 5,280′ × 30′	=	158,400	
			496,320				496,320	
	= 34·5 bighas at Rs. 175 per bigha.			6,038	= 34·5 bighas at Rs. 175 per bigha			6,038
Carried over ..				6,038				6,038

Hooghly—Estimate No. 37—*concld.*

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
			Rs.			Rs.
Brought Forward			6,038			6,038
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 209	= 1,103,520		5,280′ × 196	= 1,034,880	
	Deduct existing 5,280′ × 31′/2 × 1′	= 81,840		*Deduct* existing 5,280′ × 31′/2 × 1′	= 81,840	
		1,021,680			953,040	
	At Rs. 4 per 1,000 c.ft.	..	4,086	At Rs. 4 per 1,000 c.ft.	..	3,812
Turfing ..	5,280′ × 22·5′ = 118,800 s.ft. At Rs. 3-8 per 1,000 s.ft.	..	416	5,280′ × 22·5′ = 118,800 s.ft. At Rs. 3-8 per 1,000 s.ft.	..	416
Edging ..	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	..	581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	..	581
Soling ..	5,280′ × 10 = 52,800 s.ft. At Rs. 11 per 100 s.ft.	..	5,808	5,280′ × 8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft.	..	2,534
Jhama metal ..	5,280′ × 10′ × 4″ = 17,600 c.ft. At Rs. 23 per 100 c.ft.	..	4,048	5,280′ × 8′ × 8″ = 28,160 c.ft. At Rs. 23 per 100 c.ft.	..	6,477
Stone metal ..	5,280′ × 10′ × 3½″ = 15,400 c.ft. At Rs. 63 per 100 c.ft.		9,702	..		..
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.	..	5,874	..	..	
Posts and pillars	40 nos. at Rs. 6 each	..	240	40 nos. at Rs. 6 each	..	240
			36,793			20,098
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.		3,679			2,010
	Total	..	40,472			22,108
	Say	..	40,500			22,500

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road ..	7 miles.	40,500 per mile.	2,83,500	7 miles.	22,500 per mile.	1,57,500
Constructing minor bridges of length above 30 ft.	100 r.ft.	260 per r.ft.	26,000	100 r.ft.	260 per r.ft.	26,000
Constructing minor bridges of length up to 30 ft.	15 r.ft.	330 per r.ft.	4,950	15 r.ft.	330 per r.ft.	4,950
Constructing reinforced concrete pipe culverts.	166 r.ft.	300 per r.ft.	49,800	166 r.ft.	300 per r.ft.	49,800
Total ..	..	..	3,64,250	..	..	2,38,250
Say ..	..	..	3·75 lakhs.	..	..	2·50 lakhs.

ESTIMATE No. 38.

Road No. 0—Sub-section 1—Singur to Moshat.

Part (1)—Width of land, particulars of embankment and rates for various items of work.

Mileage.	Land. Existing width.	Land. Cost per bigha.	Embankment. Existing height.	Height above or below H.F.L. Above.	Below.	Length for which road is below H.F.L.	Proposed height.	Existing width of crest.	Existing width of toe.	Rate for jhama metal.	Rate for stone metal.
	Ft.	Rs.	Ft.	Ft.			Ft.	Ft.	Ft.	Rs.	Rs.
1	17	200	1·55	2·00	..	..	3	12	17	21	30
2	16	300	1·65	1·70	..	..	3	12	16	21	31
3	15	300	0·00	1·80	..	..	3	10	12	21	32
4	16	200	1·16	0·85	..	..	3	12	16	21	32
5	18	200	2·40	1·60	..	..	3	14	18	21	31
6	12	300	0·72	1·94	..	..	3	10	12	21	32
6·82	11	300	0·00	1·87	..	..	3	10	11	21	33
Total 6·82	105	1,800	7·48	..	..	..	21	80	102	147	221
Average ..	15	257	1·07	..	..	..	3	11·4	14·5	21	31·5
Say ..	..	300	..	..	..	..	4	11	14	23	33

Prevailing average rate for—

Item		Unit	Rs.	a.	Item		Unit	Rs.	a.
Earthwork	..	1,000 c.ft.	4	0	Single brick soling 3"	..	100 s.ft.	6	0
Turfing	..	1,000 s.ft.	3	8	Double brick soling 6"	..	100 s.ft.	11	0
Brick-on-end edging	..	100 r.ft.	5	8					

Parts (2) (a) and (2) (b)—Details of existing bridges and proposals for improvement as per specifications A and B.

Mileage.	Average height of bank above G.L. of improved road.	Existing bridges or unbridged gaps.	Whether up to specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
1	3	New construction ..	..	..	6	2—3' dia. R. C. pipe culverts.
		Ditto ..	..	..	6	2 ditto.
		Ditto ..	..	..	6	2 ditto.
2	3	1—3' 0" arched masonry culvert.	No	No	6	2 ditto.
		New construction ..	..	..	6	2 ditto.
3	3	Ditto ..	..	..	6	2 ditto.
		Ditto ..	..	..	6	2 ditto.
		1—1' 6" R. C. pipe culvert.	No	No	6	2 ditto.
4	3	New construction ..	..	..	6	2 ditto.
		Ditto ..	..	..	6	2 ditto.
		1—40' 0" plank topped culvert.	No	No	50	Bridge.
Carried over ..		44' 6"			110	

Hooghly—Estimate No. 38—*contd.*

Mileage.	Average height of bank above G. L. of improved road.	Existing bridges or unbridged gaps.	Whether up to Specifications A and B.	Whether feasible to recondition and probable cost.	Replacement proposals in r.ft. R.ft.	Type.
1	2	3	4	5	6	7
	Ft.					
Brought forward						
5	3	New construction ..	..	..	6	2—3′ dia. R. C. pipe culverts.
		Ditto ..	..	..	6	2 ditto.
		1—1′ 0″ pipe culvert ..	..	..	6	2 ditto.
6	3	1—9′ 0″ plank topped culvert.	No	No	15	Bridge.
		1—12′ 0″ ditto	"	"	15	ditto.
		1—1′ 0″ Hume pipe culvert.	"	"	3	1—3′ dia. R. C. pipe culvert.
		1—2′ 0″ plank topped culvert.	"	"	6	2 ditto.
		1—3′ 0″ arched masonry culvert.	"	"	6	2 ditto.
(6·82) 7	3	1—3′ 0″ ditto ..	"	"	6	2 ditto.
Total 6·82	..	75·50 r.ft. or 13 r.ft. per mile		..	179	or 26·2 r.ft. per mile.

Allowance of 30 r.ft. per mile excluding bridges of over 100 ft. in length is considered necessary.

Extra provision for R. C. pipe culverts and minor bridges of length up to 30 ft. = 6·82 (30′—26·2′) = Say 26′

∴ R. C. pipe culverts = ¼ × 26′ = 6·5′, say .. 6

Minor bridges up to 30 ft. = ¾ × 26′ = 19·5′, say .. 20

Total .. 205 r.ft.

Abstract of the above.

Constructing minor bridges of length above 30 ft.	..	50
Constructing minor bridges of length up to 30 ft.	..	50
Constructing reinforced concrete pipe culverts	..	105
Total	..	205 r.ft.

Part (3)—Analysis of rough cost per mile of road (excluding bridging).

Existing unmetalled road.

Items.	Specification A. Details.		Cost.	Specification B. Details.		Cost.
		S.ft.	Rs.		S.ft.	Rs.
Land ..	5,280′ × 112′ =	591,360		5,280′ × 112′ =	591,360	
	Deduct existing 5,280′ × 15′ =	79,200		*Deduct* existing 5,280′ × 15′	79,200	
		512,160			512,160	
	= 35·56 bighas at Rs. 300 per bigha.		10,668	= 35·56 bighas at Rs. 300 per bigha.		10,668
		C.ft.			C.ft.	
Earthwork ..	5,280′ × 161 =	850,080		5,280′ × 150 =	792,000	
	Deduct existing 5,280′ × 25′ × 1·07′ =	70,600		*Deduct* existing 5,280′ × 25″ × 1·07′	70,600	
	2	779,480		2	721,400	2,885
	At Rs. 4 per 1,000 c.ft.		3,118	At Rs. 4 per 1,000 c.ft.		
Carried over ..			13,786			13,553

Hooghly—Estimate No. 38—*concld.*

Items.	Specification A. Details.	Cost.	Specification B. Details.	Cost.
		Rs.		Rs.
Brought forward		13,786		13,553
Turfing ..	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft.	333	5,280′ × 18′ = 95,040 s.ft. At Rs. 3-8 per 1,000 s.ft.	333
Edging ..	5,280′ × 2 = 10,560 s.ft. At Rs. 5-8 as. per 100 r.ft.	581	5,280′ × 2 = 10,560 r.ft. At Rs. 5-8 per 100 r.ft.	581
Soling ..	5,280′ × 10′ = 52,800 s.ft. At Rs. 11 per 100 s.ft.	5,808	5,280′ × 8′ = 42,240 s.ft. At Rs. 6 per 100 s.ft.	2,534
Stone metal ..	5,280′ × 10′ × 7″ = 30,800 c.ft. At Rs. 33 per 100 c.ft.	10,164	5,280′ × 8′ × 7″ = 24,640 c.ft. At Rs. 33 per 100 c.ft.	8,131
Wearing course	5,280′ × 10′ = 52,800 s.ft. At Rs. 11-2 per 100 s.ft.	5,874	....	..
Posts and pillars	40 nos. at Rs. 6 each ..	240	40 nos. at Rs. 6 each	240
		36,486		25,372
	Add contingencies at 7½ per cent. *Add* tools and plant at 2½ per cent.	3,649		2,537
	Total ..	40,135		27,909
	Say ..	40,500		28,000

Part (4)—Rough estimate showing probable cost of the road including bridging.

Items.	Specification A. Quantity.	Rate.	Cost.	Specification B. Quantity.	Rate.	Cost.
		Rs.	Rs.		Rs.	Rs.
Improving existing unmetalled road.	6·82 miles.	40,500 per mile.	2,76,210	6·82 miles.	28,000 per mile.	1,90,960
Constructing minor bridges of length above 30 ft.	50 r.ft.	260 per r.ft.	13,000	50 r.ft.	260 per r.ft.	13,000
Constructing minor bridges of length up to 30 ft.	50 r.ft.	330 per r.ft.	16,500	50 r.ft.	330 per r.ft.	16,500
Constructing reinforced concrete pipe culverts.	105 r.ft.	300 per r.ft.	31,500	105 r.ft.	300 per r.ft.	31,500
Total ..	..	..	3,37,210	..	..	2,51,960
Say ..	..	..	**3·50 lakhs.**	..	..	**2·75 lakhs.**